



UNIVERSITY OF SPLIT

SCHOOL OF MEDICINE

FACULTY OF CHEMISTRY AND TECHNOLOGY

DETAILED PROPOSAL OF THE STUDY PROGRAM
INTEGRATED UNDERGRADUATE AND GRADUATE
UNIVERSITY STUDY PROGRAM
PHARMACY

SPLIT, 2022

GENERAL INFORMATION OF HIGHER EDUCATION INSTITUTION

Name of higher education institution	University of Split School of Medicine (provider) Faculty of Chemistry and Technology (co-provider)
Address	Šoltanska 2, 21 000 Split Ruđera Boškovića 35, 21 000 Split
Phone	++385 21 557 800 ++385 21 329 420
Fax	++385 21 557 895 ++385 21 329 461
E.mail	natalia.cotic@mefst.hr dekanat@ktf-split.hr
Internet address	www.mefst.unist.hr/ www.ktf.unist.hr/

GENERAL INFORMATION OF THE STUDY PROGRAMME

Name of the study program	Integrated undergraduate and graduate study of Pharmacy		
Provider of the study program	University of Split School of Medicine		
Co-provider of the study program	Faculty of Chemistry and Technology		
Type of study program	Vocational study program <input type="checkbox"/>	University study program <input checked="" type="checkbox"/>	
Level of study program	Undergraduate <input type="checkbox"/>	Graduate <input type="checkbox"/>	Integrated <input checked="" type="checkbox"/>
	Postgraduate <input type="checkbox"/>	Postgraduate specialist <input type="checkbox"/>	Graduate specialist <input type="checkbox"/>
Academic/vocational title earned at completion of study	Master of Pharmacy		

1. INTRODUCTION

1.1. Reasons for starting the study programme

At the EU level, there are strategic guidelines that state that pharmacists in the 21st century will play a key role in achieving an efficient and sustainable health system (EU PHARMINE: Pharmacy Education in Europe¹). At the global level, the International Pharmaceutical Federation (FIP) emphasizes the importance of identifying national and social needs, defining the role of pharmacists in providing health care and involving all relevant stakeholders in the process of ensuring and improving the quality of education (Quality Assurance of Pharmacy Education: the FIP Global Framework²). In addition, pharmacy is one of the most financially strong research and development and industrial areas in the Republic of Croatia (Smart Specialization Strategy of the Republic of Croatia 2016-2020.³) and Masters of Pharmacy are the providers of research, development, production, quality assurance, distribution and regulation of drugs, medical and cosmetic products and food supplements. The workforce of the Pharmacy sub-sector makes up 8.47% of the total workforce of the Health sector, while the unemployment rate in the Pharmacy sub-sector is only 5.96%, which is significantly below the overall unemployment rate in the Republic of Croatia (according to the HKO portal⁴). Additionally, the unemployment rate of experts and scientists in the Pharmacy sub-sector is about 8 times lower than the unemployment rate of engineers, technicians and related professions in the Republic of Croatia. There is a visible trend of an increase in the number of employees in the production of basic pharmaceutical products and pharmaceutical preparations, which is present at the level of 28 countries of the European Union in the entire observed period, 2011 - 2016 (according to the Projection on future trends in the labor market⁵). The number of persons employed in the production of basic pharmaceutical products and pharmaceutical preparations in research and development in Croatia recorded an increasing trend from 2010 to 2017, and in that period, the number of employees increased by 18.2%. Future Masters of Pharmacy are largely employed as pharmacists in the Republic of Croatia. In 2003, there were 2,020 pharmacists licensed to work independently, and in 2020 there were 4,075 (according to the Register of Pharmacists of the Croatian Chamber of Pharmacists⁶). This doubling of the number of licensed pharmacists within the period from

¹ <https://www.pharmine.eu/wp-content/uploads/2014/05/PHARMINE-final-report-Lisbon-0611.pdf>

² https://www.fip.org/files/fip/PharmacyEducation/Quality_Assurance/QA_Framework_2nd_Edition_online_version.pdf

³ https://narodne-novine.nn.hr/clanci/sluzbeni/2016_04_32_853.html

⁴ <http://hko.mrms.hr/>

⁵ https://www.eizg.hr/userdocsimages/projekti/zavrzeni/studija_projekcije_o_buducim_kretanjima_na_trzistu_rada.pdf

⁶ <https://www.hljik.hr/registar-ljekarnika-s36>

2003 to 2020 testifies to the pronounced strengthening of pharmacy activities in the territory of the Republic of Croatia. FIP predicts the growth of the total number of pharmacists worldwide in its report (Pharmacy Workforce Intelligence: Global Trends Report 2018.⁷).

The strategic document *Network of higher education institutions and study programs*,⁸ which was prepared by the National Council for Higher Education in accordance with the Law on Quality Assurance in Science and Higher Education, and the document was accepted by the Croatian Parliament on October 28, 2011, clearly indicates the need for a Master's degree in Pharmacy at the level of the Republic of Croatia. The network highlights pharmacy as a profession in deficit throughout the Republic of Croatia (in all twenty counties and the City of Zagreb), among the recommendations for educational enrollment policy and scholarship policy. The joint integrated undergraduate and graduate pharmacy study program of the University of Split School of Medicine (USSM) and the Faculty of Chemistry and Technology (FCT) of the University of Split is in accordance with the requirements prescribed by the Act on Regulated Professions and Recognition of Foreign Professional Qualifications (Official Gazette 82/15; 70/19 - Art. 31, 32, 33 and 34; 47/20) and Directive 2013/55/EU of the European Parliament and the Council of 20 November 2013 amending Directive 2005/36/EC on the recognition of professional qualifications and Regulation (EU) no. 1024/2012 on administrative cooperation through the Internal Market Information System ("IMI Regulation"). The Study enables the training of pharmacists as an important co-provider of health care, while respecting the peculiarities/specificities and the Mediterranean orientation that is fostered at the USSM and FCT. Ensuring quality training of pharmacists is directly reflected in the improvement of the health standard of the population and the quality of life in general, so a regional impact is also expected. The Study of Pharmacy requires a high degree of integration of science and profession according to the highest criteria of excellence, which creates an academic atmosphere in the practice of evidence-based pharmacy adapted to the new role of pharmacists in society.

In summary, the reasons that can be highlighted for carrying out this study are:

- Community pharmacy and its impact on the local community, the region and the Republic of Croatia as a whole: community pharmacy affects the state and development of the local community where it is located, especially public health, meeting the needs of society and the individual, and public pharmacists have an important role in promoting, preserving health, preventing disease and improving the quality of life

⁷ https://www.fip.org/www/streamfile.php?filename=fip/PharmacyEducation/Workforce_Report_2018.pdf

⁸ https://www.azvo.hr/images/stories/visoko/Mreža_visokih_učilišta_i%20studijskih_programa_u_RH_final.pdf

- extensive and specific relationship between existing pharmacies and all southern Croatian medical centers (Zadar, Šibenik, Dubrovnik, Imotski, Metković...)
- assistance in the introduction of national health guidelines at the regional level
- savings at different levels compared to dislocated pharmacy studies
- benefit for the University (retention and development of own intellectual potential, intellectual and academic empowerment, high international criteria according to which the study is conducted, the possibility of mobility and involvement of teachers from other faculties in the work, etc.)
- creation of a competitive academic atmosphere necessary for the advancement of science and the profession
- permanent support for Croats from B&H for training in the field of biomedicine and healthcare

1.2. Relationship with the local community (economy, entrepreneurship, civil society, etc.)

The connection of the Study of Pharmacy studies with the local community is reflected in the fact that it is initiated due to social needs, in order to train Masters of Pharmacy to work in pharmacies and hospitals. Regional and local communities, counties and cities, tourist offices and several other institutions are frequent partners to the Study of Pharmacy in organizing numerous activities related to health promotion and public education on health topics (congresses, symposia, tribunes, projects, educational projects, public health actions etc.)

1.3. Compatibility with requirements of professional organizations

The proposed program of Integrated Undergraduate and Graduate Study of Pharmacy complies with the requirements prescribed by the Act on Regulated Professions and Recognition of Foreign Professional Qualifications (Official Gazette 82/15; 70/19 – Articles 31, 32, 33 and 34; 47/20) and Directive 2013/55/EU of the European Parliament and Council of November 20, 2013 amending Directive 2005/36/EC on the recognition of professional qualifications, and was implemented in agreement with the Croatian Chamber of Pharmacy.

1.4. Name possible partners outside the higher education system that expressed interest in the study programme

Possible partners outside the higher education system who have so far shown interest and established cooperation during the preparation of this undergraduate and graduate study program in Pharmacy (some of them are ready to act as teaching bases and provide

assistance with available equipment as well as ensure the performance of professional practice) and plan to employ newly graduated pharmacists are the following:

- Split-Dalmatia County Pharmacy
- University Hospital Split
- Croatian Chamber of Pharmacists
- Croatian Pharmaceutical Society
- Croatian Agency for Medicinal Products and Medical Devices (HALMED)
- Pharmaceutical industry
- Different other institutions from the health sector

1.5. Financing

Study of Pharmacy is completely financed by the Croatian Government, in accordance to the Croatian laws and regulations of the University of Split

1.6. Comparability of the study programme with other accredited programmes in higher education institutions in the Republic of Croatia and EU countries

The proposed program of the integrated undergraduate and graduate study of Pharmacy is comparable to the Pharmacy study programs of the University of Zagreb⁹ and the University of Ljubljana.¹⁰ In addition, the Study of Pharmacy is aligned with the national qualification standard for the Master of Pharmacy, developed as part of the PharmMedQ project (Application of Croatian Qualification Framework, CQF, in the improvement of study programs in the field of Pharmacy and Medical Biochemistry) - financed by the European Social Fund.

1.7. Openness of the study programme to student mobility (horizontal, vertical in the Republic of Croatia, and international)

The integrated undergraduate and graduate study of Pharmacy is organized through one-semester courses, and the assessment of student workload is based on the ECTS system, which is an important prerequisite for student mobility. All competencies (knowledge, skills, independence, and responsibility) acquired during the course are competitive and practically applicable in the labor market of the region, the Republic of Croatia, and the EU. Based on the above, the Study program of Pharmacy is open for student mobility within the University of Split and between other universities in Croatia that foster the same or related studies, but also for student mobility in the wider area of Europe (ERASMUS). Student mobility will be enabled within the University of Split as elective courses will also be open to students from higher

⁹ <http://www.pharma.unizg.hr/files/file/dokumenti/KatalogPredmeta/KATALOG-PREDMETA---FARMACIJA.pdf>

¹⁰ https://www.ffa.uni-lj.si/fileadmin/datoteke/Dekanat/Pravilniki/PROSPECTUS_Pharmacy.pdf

education institutions in other fields of science. After completing the integrated university study in Pharmacy, Master of Pharmacy has the possibility of vertical mobility by enrolling in doctoral studies in the field of biomedicine and healthcare, in the field of natural sciences or in an interdisciplinary scientific field, university specialist studies, and specialization in healthcare.

1.8. Compatibility of the study programme with the University mission and the strategy of the proposer, as well as with the strategy statement of the network of higher education institutions

The Study program of Pharmacy is fully aligned with the strategic document *Network of higher education institutions and study programs* (mentioned earlier under 1.1) and with the mission and strategy of the University of Split¹¹, University of Split School of Medicine¹² and Faculty of Chemistry and Technology¹³.

1.9. Current experiences in equivalent or similar study programmes

The Faculty of Chemistry and Technology was established in 1960. Its focal points are Chemistry (Natural sciences) and Chemical engineering (Technical sciences) and, recently, Nutritional technology (Biotechnical sciences). The Faculty personnel have been participating in Chemistry courses within the University of Split and other Universities.

The recent history of the education of Medical doctors in Split starts in 1974 when the University of Zagreb, Faculty of Medicine initiated a 2-year study, for the students in the 4th and 5th years. The integral 5-year Study of Medicine started in 1979. This study will transform into an independent University of Split School of Medicine in 1997. Currently, the University of Split School of Medicine (USSM) provides integrated undergraduate and graduate studies in Medicine, Medicine in English, Dental Medicine, and from the academic year 2010/2011, the study of Pharmacy (together with the Faculty of Chemistry and Technology). In addition, postgraduate doctoral studies (Evidence-based clinical medicine, Tumour biology, Translational research in biomedicine) and a large number of postgraduate specialist studies are provided. The reaccreditation of the USSM by the Agency for Science and Higher Education, carried out in 2016, showed that the USSM is a prominent scientific, teaching and professional institution.

In 2017, a new Permit for the study of Pharmacy was issued, after a successful re-accreditation procedure and a response to the letter of expectations.

¹¹ https://www.unist.hr/sveuciliste/dokumenti/propisi?EntryId=1850&Command=Core_Download

¹² <https://neuron.mefst.hr/docs/dokumenti/strategije/MEFST-2015-STRATEGIJA.pdf?vel=780365>

¹³ https://www.ktf.unist.hr/images/stories/repozitorij/Dekanat/Strategija_razvoja_2021_2025.pdf

2. DESCRIPTION OF THE STUDY PROGRAM

2.1. General information

Scientific/artistic area of the study programme	Biomedicine and health
Duration of the study programme	5 years
The minimum number of ECTS required for completion of study	300
Enrolment requirements and admission procedure	Completed 4-year secondary school and state matriculation exam

2.2. Learning outcomes of the study program (name 15-30 learning outcomes)

IUSPF1. To interpret, connect and apply knowledge from the natural sciences to the extent that enables a scientific approach to solve professional pharmaceutical issues.

IUSPF2. To interpret, connect and apply knowledge from basic medical sciences to the extent that enables a scientific approach to solve professional pharmaceutical issues.

IUSPF3. To interpret, connect and apply knowledge from clinical medical sciences to the extent that enables a scientific approach to solve professional pharmaceutical issues.

IUSPF4. To list and describe the phases of medicine's life cycle and connect them with the knowledge acquired through basic and professional courses.

IUSPF5. To Interpret and apply expert and scientific evidence on pharmaceutical quality, safety, and effectiveness of medicines, pharmacotherapy, and integrated pharmaceutical care and self-medication.

IUSPF6. To connect, explain and apply evidence and good practices in medicine research, development of the active substance and finished medicine, production and quality control of the medicine, production of galenic formulations and extemporaneous preparations, and storage and distribution of medicines.

IUSPF7. To explain and evaluate the medicine's mechanism of action and therapeutic outcome, therapeutic indications, dosage, and adverse effects.

IUSPF8. To interpret and apply personalized medicine principles for precise and targeted individualized therapy.

IUSPF9. To explain, evaluate and apply valid legal provisions and professional guidelines in the field of medicines and pharmacy, as well as specific health and non-health activities integrated into the pharmacy field.

- IUSPF10. To explain and evaluate the indications and method of application of medical and other health-related products (dietary supplements, cosmetic products, etc.).
- IUSPF11. To interpret and apply relevant ethical guidelines, practices, and principles in the organization and management of pharmacy and pharmacy-related activities.
- IUSPF12. To review and evaluate the pharmacotherapeutic history and treatment plan and conduct education and consultation with the patient to achieve the therapy's expected clinical outcome, solve therapeutic problems, and prevent polypharmacy.
- IUSPF13. To calculate and control the dose/dosage and method of administration of the medicine and the pharmaceutical formulation.
- IUSPF14. To manage the processes of controlling the rational use of medicines and medical products and implement non-pharmacological measures to preserve health and prevent disease.
- IUSPF15. To identify, review and report suspected adverse effects/adverse events of therapy with medicines, medical products, and nutritional supplements, as well as quality defects and suspected counterfeiting.
- IUSPF16. To research and apply pharmacopeial and other internationally accepted monographs, quality requirements, standards, regulations, procedures, and good practices in the production and quality control of medicines, active and auxiliary substances, and pharmaceutical containers.
- IUSPF17. To establish a quality assurance system, design and create standard operating procedures for work in the pharmacy and the place of production.
- IUSPF18. To evaluate and decide on the rationality, justification, and safety of pharmacotherapy based on knowledge and evidence, as well as the contribution of pharmacy care to the outcome of treatment and the preservation of health, especially in the case of therapeutically demanding diseases and in special population groups of patients.
- IUSPF19. To make decisions and conclusions in the field of research and development, testing, production, quality assurance, and trade of medicines and other elements of the pharmaceutical industry by the best scientific evidence, legislation, and good practice guidelines.
- IUSPF20. To assess, evaluate and develop the principles of professional ethics and deontology in all substantive forms of pharmacy and pharmaceutical activity.
- IUSPF21. To communicate information about the disease, medicine, medical product, dietary supplement, and intervention as part of pharmaceutical care to patients,

other health and non-health professionals, regulatory bodies, and the public appropriately.

IUSPF22. To develop and apply educational and information content and specific forms of digital personal communication with the patient for the purpose of identifying pharmacotherapeutic intervention needs, preventing medication errors, reporting adverse effects, etc.

IUSPF23. To recognize your areas of interest and educate yourself accordingly through lifelong learning programs.

IUSPF24. To adopt learning styles and methods that enable post-graduate specialist and doctoral training in the field of biomedicine and healthcare.

Each mandatory course in the Study is associated with the corresponding learning outcome(s) of the study program. The matrix of connection between courses and learning outcomes of the study program is given in a separate attachment.

2.3. Possibility of employment

Upon graduating with an MPharm degree, he/she acquires the competencies necessary for independent work in community pharmacies and hospital pharmacies. In the same way, pharmacists can continue their career with the manufacturer, as a person responsible for issuing a medicine, a person responsible for the sale of medicines, and a person responsible for pharmacovigilance. Furthermore, pharmacists can work for companies that, in accordance with good distribution practice, deal with the wholesale trade of drugs for human or veterinary use (wholesale drugstores) or wholesale trade, that is, mediation of the trade of active substances. Masters of pharmacy can work in public authorities (State ministries, State Inspectorate, national regulatory agency, national health insurance fund) that are responsible for regulating or supervising certain activities in the field of drugs and pharmacy. Also, pharmacists can work in state health institutes, professional organizations, publishing houses, research institutes, and universities. As stated earlier (under 1.1), pharmacy is a deficient profession in the Republic of Croatia, and there are no unemployed pharmacists on the market.

2.4. The possibility of continuing studies at a higher level

After completing the integrated university Study of Pharmacy, Masters of Pharmacy have the possibility of vertical mobility by enrolling in doctoral studies in the field of biomedicine and healthcare, in the field of natural sciences, as well as in an interdisciplinary scientific field, university specialist studies and specialization in healthcare. The possibility of postgraduate education in other related fields is also open, according to the conditions of individual studies.

2.5. Study/s of the lower level of the proposer or other institutions in the Republic of Croatia from which it is possible to enroll in the proposed study

It is not applicable, as the study is integrated, and students are enrolled directly through the state matriculation exam.

2.6. Conditions and modus of studying

STRUCTURE OF THE STUDY

The study is structured for a duration of five (5) years, through ten (10) semesters with a total load of 300 ECTS points, 30 ECTS points per semester. The program includes 4-6 mandatory courses per semester and a list of elective courses from which students choose a total of seven (7) elective courses, one each in II., III., V., VI., and three in VIII. semester. Elective courses have the purpose of enriching and upgrading the content of basic courses. In addition to the above, students are systematically provided with additional education in Medical English and additional activities in Physical Education and Sports, without ECTS load. From I. to IX. semester, in addition to lectures, students attend seminars and exercises that are mandatory for all courses. Exercises are performed according to a specific semester schedule and are mostly laboratory-based. As part of the studies, after the fourth year of study, the student carries out Professional Practice for 3 weeks (120 hours) in a community pharmacy. In this way, the student gradually progresses in the acquisition of multidisciplinary knowledge that prepares him for the profession of Master of Pharmacy. Furthermore, in the last (X.) semester of studies, the student must carry out Professional Traineeship for 6 months (940 hours) in a community pharmacy.

After passing the Professional Traineeship, passing all the exams, and successfully preparing and defending the diploma thesis, the student, along with the diploma, also acquires license for independent work, with which he/she can work in any EU member state.

The study consists of a total of 45 mandatory courses, 7 elective courses, 1 Professional Practice and 1 Professional Traineeship.

CONDITIONS FOR ENROLLMENT IN THE NEXT YEAR OF THE STUDY

The student acquires the right to enroll in the next year of studies in accordance with the Rulebook on studies and the study system of the University of Split¹⁴.

2.7. System of counseling and guidance throughout the study

Student tutors (teachers) are assigned to students for each student year to help them, advise them, and guide them through their studies.

¹⁴ https://www.unist.hr/sveuciliste/dokumenti/propisi?EntryId=1780&Command=Core_Download

2.8. List of courses that students can enroll in from other studies

ELECTIVE COURSES FROM OTHER STUDIES

In the spirit of deepening and broadening their education, for the purpose of strengthening and supporting primary professional guidance, and especially in the atmosphere of developing awareness of the university's connection, students can enroll in related courses from those components of the University that have courses in their programs that touch/intertwine with the interest of Study of Pharmacy. The mentioned possibilities are realized with the prior consent of the Head of the study.

2.9. List of courses that can be taught in a foreign language

All courses can be taught in English.

2.10. Criteria and conditions for the transfer of ECTS credits

The criteria and conditions for the transfer of ECTS points are regulated by the legal acts of the University of Split, the providers of the study, and contracts with domestic and foreign partners (faculties and universities).

2.11. Completion of study

<i>Final requirement for completion of study</i>	Final thesis <input type="checkbox"/> Diploma thesis <input checked="" type="checkbox"/>	Final exam <input type="checkbox"/> Diploma exam <input type="checkbox"/>
<i>Requirements for final/diploma thesis or final/diploma/exam</i>	A student can submit a Diploma thesis in the last year of the study and can start the defense process after passing all exams.	
<i>Procedure of evaluation of final/diploma exam and evaluation and defence of final/diploma thesis</i>	Each of the three members of the Commission evaluates the preparation of the thesis (0-50 points), as well as the public defense of the thesis (0-50 points). The final grade is based on the mean value of the total number of points of the three-member committee. 0-55: (insufficient (1); 56-65: sufficient (2); 66-75: good (3); 76-85: very good (4); 86-100: excellent (5).	

2.12. List of mandatory and elective courses

Mandatory courses

List of courses							
Year of study: 1 st							
Semester:* 1 st							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR101	Introduction to Pharmacy	15	0	0	0	2.0
	FAR102	Pharmaceutical Botany ¹	30	0	30	0	5.0
	FAR103	Physics for Pharmacists ²	30	15	30	0	6.0
	FAR104	General Chemistry with Stoichiometry ³	45	15	30	0	7.0
	FAR105	Cell Biology ^{4,5}	30	15	30	0	6.0
	FAR106	General Biochemistry ⁶	30	0	15	0	4.0
	FARTJ1	Physical Education and Sports I	0	0	30	0	0.0
	FAREN1	Medical English I	0	10	0	0	0.0
	Total			180	55	165	0

List of courses							
Year of study: 1 st							
Semester:* 2 nd							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR107	Physical Chemistry ⁷	45	15	30	0	6.5
	FAR108	Mathematics and Biostatistics ⁸	30	15	30	0	4.0
	FAR109	Analytical Chemistry ^{9,10}	30	15	30	0	6.0
	FAR110	Human Anatomy and Histology ^{11,12}	30	15	30	0	5.5
	FAR111	Molecular Biology ^{13,5}	22	22	20	0	4.0
	FAR112	Pharmaceutical nomenclature	30	0	0	0	2.0
	FARIZ	Elective Course I	10	10	5	0	2.0
	FARTJ1	Physical Education and Sports I	0	0	30	0	0.0
	FAREN1	Medical English I	0	10	0	0	0.0
Total			197	102	160	0	30.0

* Note: Classes in the Study of Pharmacy are held in rotations, not by semesters. Each course represents a separate teaching block. The courses in tables are shown through semesters of 30 ECTS credits just for alignment with the tables of the University of Split. The order of the displayed courses does not correspond to the order of holding classes in rotations.

Please see the end of this subsection for the alignment between the set of learning outcomes of the national qualification standard for the Master of Pharmacy, and the courses of the Study of Pharmacy.

List of courses							
Year of study: 2 nd							
Semester:* 3 rd							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR201	Analytical Chemistry II ^{9,10}	30	15	30	0	6.0
	FAR202	Organic Chemistry I ^{14,15}	45	15	30	0	7.0
	FAR203	Pharmaceutical Microbiology ¹⁶	30	0	30	0	5.0
	FAR204	Pharmacognosy ^{17,18}	60	45	30	0	10.0
	FARIZ	Elective Course II	10	10	5	0	2.0
	FARTJ2	Physical Education and Sports II	0	0	30	0	0.0
	FAREN2	Medical English II	0	10	0	0	0.0
	Total			175	95	155	0

List of courses							
Year of study: 2 nd							
Semester:* 4 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR205	Organic Chemistry II ^{14,15}	30	15	30	0	5.0
	FAR206	Physiology ^{19,20}	45	45	15	0	8.0
	FAR207	Pathophysiology with the Basics of Pathology ²¹	45	30	30	0	7.0
	FAR208	Applied Biochemistry ²²	30	15	30	0	5.5
	FAR209	Immunology and Vaccines ^{23,24}	30	15	15	0	4.5
	FARTJ2	Physical Education and Sports II	0	0	30	0	0.0
	FAREN2	Medical English II	0	10	0	0	0.0
	Total			180	130	150	0

* Note: Classes in the Study of Pharmacy are held in rotations, not by semesters. Each course represents a separate teaching block. The courses in tables are shown through semesters of 30 ECTS credits just for alignment with the tables of the University of Split. The order of the displayed courses does not correspond to the order of holding classes in rotations.

Please see the end of this subsection for the alignment between the set of learning outcomes of the national qualification standard for the Master of Pharmacy, and the courses of the Study of Pharmacy.

List of courses							
Year of study: 3 rd							
Semester:* 5 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR301	Medical Genetics ²⁵	14	24	12	0	3.0
	FAR302	Pharmaceutical Chemistry I ²⁶	45	15	60	0	8.5
	FAR303	Instrumental Methods of Analysis in Pharmacy ²⁷	30	15	30	0	6.0
	FAR304	Pharmaceuticals ²⁸	30	30	15	0	5.5
	FAR305	Operations of Pharmaceutical Technology	30	15	30	0	5.0
	FARIZ	Elective Course III	10	10	5	0	2.0
	FAREN3	Medical English III	0	10	0	0	0.0
	Total			159	119	152	0

List of courses							
Year of study: 3 rd							
Semester:* 6 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR306	Analytics of Medicines ²⁹	60	30	45	0	10.0
	FAR307	Phytotherapy ³⁰	30	15	15	0	5,0
	FAR308	Pharmacokinetics ³¹	30	30	15	0	6.0
	FAR309	Pharmaceutical Chemistry II ²⁶	45	45	0	0	7,0
	FARIZ	Elective Course IV	10	10	5	0	2.0
	FAREN3	Medical English III	0	10	0	0	0.0
	Total			175	140	80	0

* Note: Classes in the Study of Pharmacy are held in rotations, not by semesters. Each course represents a separate teaching block. The courses in tables are shown through semesters of 30 ECTS credits just for alignment with the tables of the University of Split. The order of the displayed courses does not correspond to the order of holding classes in rotations.

Please see the end of this subsection for the alignment between the set of learning outcomes of the national qualification standard for the Master of Pharmacy, and the courses of the Study of Pharmacy.

List of courses							
Year of study: 4 th							
Semester:* 7 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR401	Pharmacology ³²	60	30	30	0	10.0
	FAR402	Biochemistry of Medicines ³³	45	15	30	0	7.0
	FAR403	Production of Pharmaceutical Formulations ³⁴	30	15	15	0	5.0
	FAR404	Pharmaceutical Formulations ³⁵	30	15	15	0	5.0
	FAR405	Extemporaneous Preparations ³⁶	15	15	15	0	3.0
	FAREN4	Medical English IV	0	10	0	0	0.0
	Total			180	100	105	0

List of courses							
Year of study: 4 th							
Semester:* 8 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR406	Cosmetology ³⁷	30	15	30	0	5.0
	KMF407	Biopharmacy ³⁸	30	0	30	0	4.0
	FAR408	Pharmaceutical Toxicology ³⁹	30	15	15	0	4.5
	FAR409	Pharmaceutical Legislation ⁴⁰	30	0	0	0	2.5
	FAR410	Scientific Methodology in Pharmacy ⁴¹	15	15	15	0	4.0
	FARIZ	Elective Course V	10	10	5	0	2.0
	FARIZ	Elective Course VI	10	10	5	0	2.0
	FARIZ	Elective Course VII	10	10	5	0	2.0
	FARSP	Professional Practice ⁴²	0	0	0	120	4.0
	FAREN4	Medical English IV	0	10	0	0	0.0
Total			165	85	105	120	30.0

* Note: Classes in the Study of Pharmacy are held in rotations, not by semesters. Each course represents a separate teaching block. The courses in tables are shown through semesters of 30 ECTS credits just for alignment with the tables of the University of Split. The order of the displayed courses does not correspond to the order of holding classes in rotations.

Please see the end of this subsection for the alignment between the set of learning outcomes of the national qualification standard for the Master of Pharmacy, and the courses of the Study of Pharmacy.

List of courses							
Year of study: 5 th							
Semester: * 9 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FAR501	Pharmaceutical Care and Self-Medication ^{43,44,45}	30	15	45	0	6.0
	FAR502	Clinical Pharmacology and Pharmacoeconomics ⁴⁶	30	15	15	0	4.5
	FAR503	Clinical Pharmacy and Pharmacotherapy ⁴⁷	45	15	30	0	7.0
	FAR504	Clinical Laboratory Diagnostics ⁴⁸	30	15	0	0	3.5
	FAR505	Pharmaceutical Ethics and Deontology ⁴⁹	30	0	0	0	2.0
	FARDR	Diploma Thesis** ⁵⁰	0	15	60	0	7.0
	FAREN5	Medical English V	0	10	0	0	0.0
	Total			165	85	150	0

** Student can start the defense process of the Diploma Thesis after passing all exams.

List of courses							
Year of study: 5 th							
Semester: 10 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Mandatory	FARSO	Professional Traineeship ^{51,52,53,54,55}	0	0	0	940	30.0
	Total		0	0	0	940	30.0

* Note: Classes in the Study of Pharmacy are held in rotations, not by semesters. Each course represents a separate teaching block. The courses in tables are shown through semesters of 30 ECTS credits just for alignment with the tables of the University of Split. The order of the displayed courses does not correspond to the order of holding classes in rotations.

Please see the end of this subsection for the alignment between the set of learning outcomes of the national qualification standard for the Master of Pharmacy, and the courses of the Study of Pharmacy.

Elective courses

List of courses							
Year of study: 1 st							
Semester: 2 nd							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Elective	FARIZ1	Safety in the Laboratory	10	10	5	0	2.0
	FARIZ2	Community Pharmacy	10	10	5	0	2.0
	FARIZ3	Pharmaceutical Marketing	10	10	5	0	2.0
	FARIZ4	Biomedical Curiosities	10	10	5	0	2.0

List of courses							
Year of study: 2 nd							
Semester: 3 rd							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Elective	FARIZ5	Dietetics	10	10	5	0	2.0
	FARIZ6	Basics of Bioinorganic Chemistry	10	10	5	0	2.0
	FARIZ7	Oxidative Stress and Antioxidant Defense	10	10	5	0	2.0
	FARIZ8	Teratology	10	10	5	0	2.0

List of courses							
Year of study: 3 rd							
Semester: 5 th & 6 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Elective	FARIZ9	Physical Biochemistry	10	10	5	0	2.0
	FARIZ10	Sports and Steroids	10	10	5	0	2.0
	FARIZ11	Molecular Basis of Tumorigenesis	10	10	5	0	2.0
	FARIZ12	Molecular Research in Medicine	10	10	5	0	2.0
	FARIZ13	Population Genetics	10	10	5	0	2.0
	FARIZ14	How to Live to a Hundred?	10	10	5	0	2.0
	FARIZ15	How to Make Your Own Organ?	10	10	5	0	2.0
	FARIZ16	Packaging of Pharmaceutical Products	10	10	5	0	2.0
	FARIZ17	Kinetic Methods of Analysis of Pharmaceutical Preparations	10	10	5	0	2.0

List of courses							
Year of study: 4 th							
Semester: 8 th							
STATUS	CODE	COURSE	HOURS IN SEMESTER				ECTS
			L	S	E	F	
Elective	FARIZ18	Biotechnological Processes of the Pharmaceutical Industry	10	10	5	0	2.0
	FARIZ19	Research and Development of Medicines	10	10	5	0	2.0
	FARIZ20	Tribunal Pharmacy	10	10	5	0	2.0
	FARIZ21	Oncological Pharmacy	10	10	5	0	2.0
	FARIZ22	Psychopharmacotherapy	10	10	5	0	2.0
	FARIZ23	Science for Society	10	10	5	0	2.0
	FARIZ24	Genes and Pain	10	10	5	0	2.0
	FARIZ25	Medically Assisted Fertilization	10	10	5	0	2.0
	FARIZ26	Pharmacogenetics	10	10	5	0	2.0
	FARIZ27	Technology of Synthetic Drugs	10	10	5	0	2.0

Sets of learning outcomes from the qualification standard for the *Master of Pharmacy*

- 1 Mandatory set of learning outcomes (LO) "Biology of plants"
- 2 Mandatory set of LO "Physical principles, laws and processes in pharmacy"
- 3 Mandatory set of LO "Fundamentals of General Chemistry and stoichiometry"
- 4 Mandatory set of LO "Structure and function of the cell"
- 5 Mandatory set of LO "Cellular processes"
- 6 Mandatory set of LO "Biological molecules and macromolecules"
- 7 Mandatory set of LO "Principles of Physical Chemistry"
- 8 Elective set of LO "Biostatistics"
- 9 Mandatory set of LO "Introduction to pharmaceutical qualitative and quantitative analysis"
- 10 Elective set of LO "Calculations in Analytical Chemistry"
- 11 Mandatory set of LO "Fundamentals of Anatomy"
- 12 Elective set of LO "Fundamentals of Histology"
- 13 Elective set of LO "Molecular Biology"
- 14 Mandatory set of LO "Fundamentals of Organic Chemistry"
- 15 Elective set of LO "Mechanisms of reactions, methods of preparation and identification of organic compounds"
- 16 Mandatory set of LO "Fundamentals of Microbiology" "
- 17 Mandatory set of LO "Pharmacognosy – herbal medicine"
- 18 Mandatory set of LO "Pharmacognosy - natural medicinal substances"
- 19 Mandatory set of LO "Physiology"
- 20 Elective set of LO "Physiological mechanisms and parameters"
- 21 Mandatory set of LO "Pathophysiological principles and processes"
- 22 Elective set of LO "Biochemical techniques and experiments"
- 23 Mandatory set of LO "Immune system"
- 24 Elective set of LO "Immune system in the development and therapy of diseases"
- 25 Elective set of LO " Fundamentals of Genetics"
- 26 Mandatory set of LO "Pharmaceutical Chemistry"
- 27 Mandatory set of LO "Analytical techniques in pharmacy"
- 28 Mandatory set of LO "Pharmaceuticals"
- 29 Mandatory set of LO "Analytics of medicines"
- 30 Mandatory set of LO "Phytotherapy"
- 31 Mandatory set of LO "Pharmacokinetics"
- 32 Mandatory set of LO "Pharmacology"
- 33 Mandatory set of LO "Drug metabolism"
- 34 Mandatory set of LO "Technological procedures in the industrial production of pharmaceutical formulations"
- 35 Mandatory set of LO "Development of pharmaceutical formulations"
- 36 Mandatory set of LO "Manufacture of extemporaneous preparations and galenic medicines"
- 37 Elective set of LO "Technological procedures in the production of dermatological formulations"
- 38 Mandatory set of LO "Biopharmacy"
- 39 Mandatory set of LO "Pharmaceutical Toxicology"
- 40 Mandatory set of LO "Regulations in the field of healthcare"
- 41 Elective set of LO "Preclinical and clinical trials"
- 42 Mandatory set of LO "Professional Practice"
- 43 Mandatory set of LO "Pharmaceutical Care"
- 44 Mandatory set of LO "Dispensing medicines and medical products"
- 45 Elective set of LO "Self-Medication"
- 46 Elective set of LO "Pharmacoeconomics"
- 47 Mandatory set of LO "Clinical Pharmacy and Pharmacotherapy "
- 48 Elective set of LO "Laboratory diagnostics"
- 49 Mandatory set of LO "Pharmaceutical Ethics"
- 50 Mandatory set of LO "Diploma Thesis"
- 51 Mandatory set of LO "Professional Traineeship - Public Health"
- 52 Mandatory set of LO "Professional Traineeship - Manufacture of extemporaneous and galenic preparations"
- 53 Mandatory set of LO "Professional Traineeship - Development of personal and professional competencies"
- 54 Mandatory set of LO "Professional Traineeship - Work organization and Pharmacy business "
- 55 Mandatory set of LO "Professional Traineeship - Pharmaceutical Care"

2.13. Course description

NAME OF THE COURSE		Introduction to Pharmacy				
Code	FAR101	Year of study	1			
Course teacher	Asst. Prof. Doris Rušić	Credits (ECTS)	2.0			
Associate teachers	Asst. Prof. Josipa Bukić	Type of instruction (number of hours)	L	S	E	F
			15	0	0	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	In the education of pharmacists, as independent and creative persons, it is important to explain the task and social role of pharmacy and pharmacists, both in the past and in the present, from a historical, scientific, artistic, intellectual and technical point of view. In the Introduction to Pharmacy course, students will see some horizons of pharmaceutical science and the profession, get a first and fleeting idea of what modern pharmacy does, what is the place and significance of pharmaceutical studies, what is the scope of studies, as well as the diversity of their future profession in the healthcare system .					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. List and enumerate important data, persons, years from the history of pharmacy. 2. Name and connect facts related to the scientific approach to pharmacy. 3. Choose pharmaceutical ethical principles. 4. Describe and define areas of pharmacy care. 5. Describe and enumerate the scope of a pharmacist's work. 6. Rank important people from pharmacy. 7. Remember important definitions and information related to medicines. 					
Course content broken down in detail by weekly class schedule (syllabus)	<ol style="list-style-type: none"> 1 Introductory lecture (1) 2 Introductory material – Allegorical presentation of Pharmacy and the mythology of pharmacy (1) 3 Pharmacy - About the essence of pharmacy and the pharmaceutical map of Europe (1) 4 Pharmacopoetical sciences – pharmacy bridges natural science and Medicine (1) 5 Pharmacy in books and pharmaceutical information Vatican Library, Information on Chemistry and Drug Nomenclature The role of the patient in drug treatment; Information flow (1) 6 Pharmacist – the best chemist in healthcare; Roger and Francis Bacon Slute laboratory work; Chemistry - central science (1) 7 Pharmacist – health educator; Ethics and citizenship (1) 8 A window into pharmacology (1) 9 Pharmacy: about the name, in society and according to Shakespeare; Statutes of Dalmatian towns - pharmacy in Trogir (1) 10 Production of medicines and pharmaceutical forms (1) 11 Imagination is more important than information. Linus Pauling (1) 12. The creative power of pharmacy: unusual biographies, 					

	The story of white gold, Goethe and pharmacy, Coca Cola (1) 13. Professional words and Croatian terminology. Pharmacopoeial nomenclature; Pharmacy studies in Croatia (1) 14. Organization of pharmacy in Croatia and the EU (1) 15. Development of pharmacy practice, Pharmacy ethics and deontology Good pharmacy practice (1)					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The exam is a written test. The test consists of 25 unequally evaluated questions. Estimated time for solving exam questions is up to 60 minutes. Students who collect more than 60% of the possible points pass the exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	V. Grdinić, Uvod u farmaciju, Vlastita naklada, Drugo izdanje, Zagreb, 2004.			30		
Optional literature (at the time of submission of study programme proposal)	M.Portolan, D.Jonjić, A.Grundler: Ljekarnička praksa: Ljekarnici u skrbi za bolesnika, HLJK, Zagreb, 2011. www.hljk.hr Izdavačka djelatnost					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Pharmaceutical Botany				
Code	FAR102	Year of study	1.			
Course teacher	Prof. Valerija Dunkić	Credits (ECTS)	5.0			
Associate teachers	Assoc. Prof. Mirko Ruščić, Asst. Prof. Elma Vuko	Type of instruction (number of hours)	L	S	E	F
			30		30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>Students learn to:</p> <ul style="list-style-type: none"> • Knowledge of morphological and anatomical structure of plant cells, tissues and organs • The classification of plants systematic • Understand the basic metabolic principles in order to know the major secondary metabolites important for pharmaceutical applications 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. To compare the basic anatomical characteristics of selected plant species, genera, families and higher taxonomic categories.* 2. To compare the basic morphological characteristics of selected plant species, genera, families and higher taxonomic categories.* 3. To compare the role of plant organs and tissues.* 4. To name and classify the observed medicinal plant species into appropriate taxonomic categories <p>*Learning outcome from the set of learning outcomes Biology of plants</p>					
Course content broken down in detail by weekly class schedule (syllabus)	Content		L	E		
	Introduction, specific plant cells Ergastic substances, starch, starch types and occurrence Vacuoles, excretory and secretory substances		3	3		
	Structure of plant cell and chemistry of protoplasm and cell wall. The stage of morphological organisation.		3	3		
	Plant tissues: meristem and mature tissues. Anatomy of vegetative body: leaf, stem and root. Adaptation of the plant to specific habitats and changed in inner structures.		3	3		
	Primary and secondary growth and anatomy of monocotyledons, dicotyledons and conifers.		3	3		
	Morphology and adaptation of vegetative body: leaf, stem and root.		3	3		
	Sexually and nonsexual propagate. Development of seed, fruit and types of fruit.		3	3		
	Plant systematics, plant nomenclature Bryophyta, Pteridophyta		3	3		
	Spermatophyta - Coniferophytina, Cycadophytina		3	3		
	Magnoliophytina – Magnoliatae – Magnoliidae, Hamamelididae		3	3		
Dilleniidae, Caryophyllidae, Rosidae, Asteridae, -Liliatae		3	3			
<input checked="" type="checkbox"/> lectures		<input type="checkbox"/> independent assignments				

Format of instruction	<input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	2.0	Research		Practical training	1.0
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	1.0	Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>The exam consists of a written and an oral part. The course material is divided into two units, which students take via partial written exams or by taking the full exam at the end of the course. The written exam is considered passed if students achieve at least 60% of the total number of points. Scoring of the written exam: <60% student failed; 60-69% sufficient (2); 70-79% good (3); 80-89% very good (4); 90-100% excellent (5). After passing the written part and the herbarium, the student acquires the right to take the oral part of the exam. The final grade is formed based on the grades from the written and oral part of the exam.</p>					
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media		
	Nikolić, T. Morfologija biljaka, Alfa, Zagreb, 2017		3			
	D. Denffer & H. Ziegler: Botanika (Morfologija i Fiziologija), Školska knjiga, Zagreb, 1982.					
	B. P. Kozlina: Fiziologija bilja, Profil, Zagreb, 2003					
Optional literature (at the time of submission of study programme proposal)	D. Kuštrak, Farmakognozija - fitofarmacija, Golden marketing - Tehnička knjiga d.d., 2005.; Paul M Dewick, Medicinal Natural Products, A Biosynthetic Approach, John Wiley & Sons Ltd., 2002; Bruneton J., Pharmacognosy, Phytochemistry, Medicinal Plants, 3 rd edition, Tec & Doc Lavoisier, Paris,					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Physics for Pharmacists				
Code	FAR103	Year of study	1.			
Course teacher	Assoc. Prof. Marija Raguž	Credits (ECTS)	6.0			
Associate teachers	Zvonimir Boban, mag. phys.	Type of instruction (number of hours)	L	S	E	F
	Ivan Mardešić, mag. phys. Ana Puljas, mag. phys.		30	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Understanding of basic physical phenomena and laws. Acquiring theoretical knowledge that is necessary as a prerequisite for distinguishing the concepts of classical and modern physics. Application of measurement methods necessary for laboratory work and use of modern equipment.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> Physical quantities and measurement units. Explain basic physical principles and laws in the field of general physics and its application in pharmacy. Describe the behavior and properties of matter using fundamental forces in nature.* Explain the processes that take place in the atomic nucleus, gases, liquids and at the phase boundary, as well as the physical foundations of thermodynamic processes.* Explain the peculiarities of transmission in a system of many particles, the basic properties of electric and magnetic fields and the way electromagnetic waves propagate and their interaction with substances.* <p>*LO from set of LO Physical principles, laws and processes in pharmacy</p>					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures (30 student hours):		Number of hours:			
	1. Introductory lecture				1	
	2. Description and causes of motion				2	
	3. Forces and force fields in nature				1	
	4. Elementary particles, quantumness, quantum mechanical description of atoms				2	
	5. Atomic nucleus and chemical bonds				2	
	6. Gas				3	
	7. Phenomena at the border of phase				2	
	8. Thermal motion, internal energy and heat				3	
	9. Phases and phase transitions				2	
	10. Direction of process				2	
	11. Transfer of substances				2	
	12. Heat transfer				2	
	13. Macroscopic sources of electric field				1	
	14. Wave motion				2	
	15. Optical electromagnetic waves				2	
	16. Image formation with light waves				1	
	Seminars: (15 student hours):		Number of hours:			
	1. Work and energy				2	
	2. Energy of molecules				2	
	3. Phenomena at the border of phase				2	
	4. Charge transfer				2	
	5. Sources of the magnetic field				1	
	6. Magnetic field effects				2	

	7. EMI and electric circuits [1. part]	1				
	8. Current circuits [2. part]	1				
	9. Transfer of wave energy to matter	1				
	10. Diffraction of waves	1				
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	2.0	Research		Practical training	1.0
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	1.0	Oral exam	1.0	(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The written part of the exam can be passed through two colloquia during the course (maximum number of points is 40+40=80) or in a written exam during which tasks from seven teaching units are solved (maximum number of points is 70). A student passes the written exam if he scores 50% of the maximum number of points and acquires the right to take the oral knowledge test.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	J. Herak, Osnove kemijske fizike, Farmaceutsko-biokemijski fakultet Sveučilišta u Zagrebu, 2001.N.					
	Bešić Erim, Herak Janko: Zbirka zadataka iz fizike. Farmaceutsko-biokemijski fakultet Sveučilišta u Zagrebu, 2002.					
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of success in exams - Reports of the Committee for Teaching, the Committee for Teaching Supervision and the Committee for Quality Improvement -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		General Chemistry with Stoichiometry				
Code	FAR104	Year of study	1			
Course teacher	Asst. Prof. Ivana Škugor Rončević	Credits (ECTS)	7.0			
Associate teachers	Assoc. Prof. Marijo Buzuk Asst. Prof. Nives Vladislavić	Type of instruction (number of hours)	L	S	E	F
			45	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Familiarising students with basic chemical laws and principles, chemical reactivity of elements in the periodic table, properties and chemical composition of substances. Training students to follow the chemistry subject group curriculum that follows General and Inorganic Chemistry. Developing students' ability to think critically about experiments performed in the laboratory and the incorporation of chemistry into daily life.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Distinction between elementary substances and compounds, distinction between homogeneous and heterogeneous mixtures, and description of methods by which mixtures can be separated into pure substances. 2. Represent chemical laws, quantities, and equations.* 3. Apply chemical calculations - stoichiometry.* 4. Describe the electronic structure of atoms, chemical bonds, and intermolecular forces.* 5. Describe the properties of solutions, solids, and gases.* 6. Distinguish between chemical reactions and analyse the progress of specific chemical reactions based on knowledge of chemical kinetics and equilibrium. 7. Describe the structure and properties of complex ions and their compounds. 8. Perform simple chemical experiments. 9. Apply relevant working techniques in the chemistry laboratory.* *LO from set of LO Fundamentals of General Chemistry and stoichiometry					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: <ol style="list-style-type: none"> 1. Introduction - natural sciences and chemistry. Classification of matter. Pure substances. Physical and chemical properties of pure substances. Division of substances into pure substances. Properties of pure substances. 2. Types of pure substances, atom and chemical element, physical and chemical properties. Chemical symbols of the elements. Laws of chemical combination by mass and volume. Atomic theory - From the first ideas to John Dalton. Avogadro's hypothesis. Gas laws and equation of state of the ideal gas. Real gasses. Relative atomic and molecular mass. Methods of determining relative atomic masses. 3. Discovery of the structure of the atom. Discovery of X-rays and radioactivity. Rutherford's model of the atom. X-rays and crystal structure. Bragg's equation. 4. Isotopes and the structure of the atomic nucleus. Structure of pure substances. Atomic structure of pure substances. Types of crystal systems and crystal properties. Cubic crystal system. Molecular structure of pure substances. 5. The nature of gas. The nature of liquid. The concept of temperature. Kinetic theory of gasses. 					

6. Electronic structure of atoms - Bohr model of atoms, quantum numbers. Quantum theory and electronic structure of atoms. Atomic orbitals. Periodic classification of elements and the periodic table. Periodic changes of physical properties. Atomic radius. Ionization energy. Electron affinity. Electronegativity.

7. Chemical bonding and structure of molecules - electron theory of valence, ionic and covalent compounds. Electronegativity and degree of oxidation. Writing Lewis structures and the octet rule. Formal charges. Exceptions to the octet rule. VSEPR model and molecular geometry.

8. Bond characteristics. Valence bond theory and molecular orbital theory.

9. Mesomerism. Partial ionic character of a covalent bond and vice versa. Electronegativity and degree of oxidation. Allotropy and isomorphism. Intermolecular forces. Dipole moment, Van der Waals and London forces, hydrogen bonding.

10. Structure and properties of liquids and solids. Physical properties of solutions. Types of solutions. Expressions of concentration.

11. Solutions of liquids in liquids. Solutions of solids in liquids. Solutions of gasses in liquids. Influence of temperature on solubility. Influence of pressure on solubility of gasses. Colligative properties of nonelectrolyte solutions and colligative properties of electrolyte solutions.

12. Chemical reactions - types of chemical reactions, redox reactions, complex reactions (protolytic reactions and precipitation and dissolution reactions), complex reactions. Chemical kinetics, reaction rate, reaction mechanism, activation energy. Chemical equilibrium - concept of equilibrium, chemical equilibrium and chemical equilibrium constant. Factors affecting chemical equilibrium.

13. Equilibria in homogeneous and heterogeneous systems. Equilibria in electrolyte solutions - equilibria in acid and base solutions, equilibria in complex solutions, equilibria between solution and undissolved crystal, redox equilibria.

14. Complex compounds, types of ligands, isomerism, application of valence bond theory.

15. Crystal field theory, spectroscopic and magnetochemical behavior of complex compounds.

Seminars:

1. Degree of oxidation: definition, rules for determining the degree of oxidation of atoms, ions, molecules. Examples and practice.
2. Nomenclature of inorganic chemistry. Names of monatomic cations. Names of monatomic anions. Names of polyatomic cations. Names of polyatomic anions. Names of ligands. Names of complex ions. Names of oxoacids and their salts.
3. Practicing the names of inorganic compounds.
4. Balancing chemical equations. Redox equations.
5. Practicing writing redox equations.
6. Stoichiometry: qualitative and quantitative relationships in chemical reactions. Molar method.
7. Stoichiometry: quantitative relationships. Utilization in chemical reactions and processes: relevant reactant, reactant in excess, theoretical amount of reactant, theoretical amount of product, utilization, losses.
8. Stoichiometry: volume and mass in chemical reactions.
9. Electronic structural formulas.
10. Lewis structural formulas.
11. Chemical equilibrium in homogeneous and heterogeneous systems.
12. Chemical equilibrium in electrolyte solutions.

	13. Characteristic reactions of inorganic chemistry. 14. Structure of complex ions, magnetic properties. Exercises: 1. Familiarization with laboratory precautions and protection, rules of laboratory work, basic laboratory operations and accessories. Separation of substances into pure substances 2. Physical and chemical changes 3. Gas laws 4. Solutions 5. Kinetics of chemical reactions, equilibrium of chemical reactions, pH, electrolysis and galvanic article 6. Nickel complexes					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	2.0	Research		Practical training	
	Experimental work	2.0	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	1.0	Oral exam	1.0	(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Prerequisite for taking the exam: all exercises must be passed and completed. A student may pass the entire exam by taking two partial tests of the theoretical material, the seminar material, and the material from the exercises during the tour. These tests allow the student to take only a specific portion of the exam. The passing threshold is 55% - exemption from the written exam. Grading principle: 60%-69% - sufficient, 70%-79% - good, 80%-89% - very good, 90%-100% - excellent. Students who fail the exam through partial tests will take the exam on the regular exam date. During the regular exam date, the exam will consist of a written portion and an oral portion. In order to take the oral portion of the exam, the student must first pass the written portion of the exam. The written part of the exam lasts 2 hours. The principle of grading the written exam: 55%-69% - sufficient, 70%-79% - good, 80%-89% - very good, 90%-100% - excellent.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	1. I. Filipović, S. Lipanović, <i>Opća i anorganska kemija, I dio, Školska knjiga, Zagreb, 1995.</i>			20		
	2. M. Sikirica, <i>Stehiometrija, Školska knjiga, Zagreb, 2008.</i>			15		

	3. B. Perić, <i>Kemijsko računanje</i> , HDKI/Kemija u industriji, Zagreb, 2006.	30	
	4. Vježbe iz Opće kemije (interna skripta), Kemijsko-tehnološki fakultet, Split.		https://www.ktf.unist.hr/index.php/nastavni-materijali-zoak/nastavni-materijali
Optional literature (at the time of submission of study programme proposal)	<ol style="list-style-type: none"> 1. Brinić, S.: Reviewed lectures from selected chapters of General Chemistry, February 2012. Faculty of Chemistry and Technology, Split. January 30, 2014. (http://www.ktf-split.hr/) 2. Grubač, Z.: Reviewed lectures from selected chapters of General Chemistry, February 2012. Faculty of Chemistry and Technology, Split. January 30, 2014. (http://www.ktf-split.hr/) 3. Ebbing, D. D., Gammon, S. D., <i>General Chemistry</i>, 9th edition, Houghton Mifflin Company, Boston, 2009. 4. Chang, R., <i>Chemistry</i>, 10th edition, McGraw-Hill, New York, 2010. 5. Cotton, F. A., Wilkinson, G., Gaus, P. L., <i>Basic Inorganic Chemistry</i>, 3rd edition, John Wiley and Sons, New York, 1995. 6. Housecroft, C., Sharpe, A. G., <i>Inorganic Chemistry</i>, 5th edition, Pearson, Harlow, 2018. 		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching activity and teaching quality -Analysis of the passing of examinations - Reports of the teaching committee, teaching supervision committee, and quality improvement committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Cell Biology				
Code	FAR105	Year of study	1			
Course teacher	Prof. Vesna Boraska Perica	Credits (ECTS)	6.0			
Associate teachers	Prof. Tatijana Zemunik, Ivana Gunjača, Ph.D., Dean Kaličanin, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the Cell Biology course is to provide students with essential knowledge of cell structure and function. This knowledge will help students with understanding the basic mechanisms underlying cell life which are necessary for diagnosis and therapy of diseases in humans. Other objectives of the course include provoking critical thinking and acquisition of professional terminology necessary for continuous monitoring of biomedical literature. The Cell biology course includes basic topics on structure, function and biological mechanisms inside the cell, the transfer of genetic information, the basics of molecular and developmental biology, with a special emphasis on human biology.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. To link the knowledge of the organization of the cell with the structure and function of the cell membrane.* 2. To describe the structure and role of the cell nucleus and the DNA molecule.* 3. To link the vesicular transport with processing and sorting of proteins.* 4. To explain the structure of biological membranes and to analyse the modes of transport through biological membranes.* 5. To describe the structure and role of the cytoskeleton.* 6. To master the skills of microscopy and preparing microscopic specimens* 7. To explain the principles of the transfer of genetic information through the processes of replication, transcription, protein synthesis and to understand the mechanisms of development of DNA errors and their repair.# 8. To explain and apply the principles of cellular metabolism, including different metabolic pathways.# <p>*LO from set of LO Structure and function of the cell #LO from set of LO Cellular processes</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (30 student hours)</u> P1. Cell structure and function. Prokaryotes vs Eukaryotes. Cell chemistry. Macromolecules. (3h) P2. Deoxyribonucleic acid – DNA. Chromosome structure (2h) P3. Ribonucleic acid - RNA. Transcription in eukaryotes and prokaryotes. (2h) P4. The nucleus (structure and transport). (2h) P5. From DNA to proteins. Genetic code. Translation (2h) P6. Cell membrane structure. Human erythrocyte membrane. Extracellular matrix. (3h) P7. Endoplasmic reticulum. (2h) P8. Cytoskeleton and cell movement. (2h) P9. Mitochondria and Peroxisomes. (2h)					

	<p>P10. Molecular biology methods (DNA analysis). Cell cycle. (2h) P11. Chloroplasts and photosynthesis (2h) P12. Mitosis, meiosis, fertilization and early embryonic development. Stem cells (2h) P13. Mutations and human health. (2h) P14. Classical and molecular genetics. (2h)</p> <p><u>Seminars (15 student hours):</u></p> <p>S1. Cell research methods. (2h) S2. DNA replication. Telomerase. (2h) S3. Regulation of transcription in eukaryotes. (3h) S4. mRNA processing. The nucleolus. (2h) S5. Regulation of translation. The organisation and sequences of cellular genomes. Human genome. (2h) S6. Plasma membrane transport principles. (2h) S7. Golgi apparatus and lysosomes. Gaucher disease. Karyotype. (2h)</p> <p><u>Practical work (30 student hours):</u></p> <p>V1. Microscopy. Visual field size. Sample preparation. (2h) V2. DNA isolation. (2h) V3. Methods of DNA analysis. DNA electrophoresis. (2h) V4. Nucleus in prokaryotes and eukaryotes. Cell size measurement. (2h) V5. Chromosomes and sex chromatin. (2h) V6. Human erythrocyte membrane isolation and biochemical analysis. (3h) V7. Human karyotype and metaphase plate formation from leucocytes. (2h) V8. Muscle cells (2h) V9. Cell cycle. Interphase and mitosis. (2h) V10. Meiosis. Gametogenesis, fertilization and early development (3h) V11. Embryonic and fetal developmental stages in rats. Bioenergetics. (2h) V12. PTC-test (Phenyl Thio Carbamide). Polymerase Chain Reaction (PCR) (2h) V13. Restriction Fragment Length Polymorphism (RFLP). Problem-solving. (2h) V14. PubMed and genome databases (2h)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	0.5	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0.5	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	5.0	Project		(Other)	
Grading and evaluating student	The attendance to classes is mandatory (20% of missingness is allowed with the required oral colloquium of the missed topics). Students are required to prepare and					

work in class and at the final exam	present pre-assigned seminars. The exam is taken in written form. The test consists of 100 questions and threshold for passing the exam is 60%.		
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Cooper GM, Hausman RE. The Cell, a Molecular Approach. 8th ed. Sunderland (Massachussets):Sinauer Associates; 2019		
	Peruzović M., Zemunik T.: Medicinska biologija, Priručnik za mikroskopske vježbe, Katedra za medicinsku biologiju, Medicinski fakultet u Splitu, Split, 2010		
Optional literature (at the time of submission of study programme proposal)	1. Alberts B et. all. Essential Cell Biology, New York, Garland Science, 3/e, 2009. 2. Turnpenny P, Ellard S. Emery's Elements of Medical Genetics. 14th edition, Elsevier Churchill Livingstone, Edinburgh 2011.		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching activity and teaching quality -Analysis of the passing of examinations - Reports of the teaching committee, teaching supervision committee, and quality improvement committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		General Biochemistry				
Code	FAR106	Year of study	1			
Course teacher	Prof. Olivera Politeo	Credits (ECTS)	4.0			
Associate teachers	Asst. Prof. Marina Tranfić Bakić	Type of instruction (number of hours)	L	S	E	F
			30	0	15	0
Status of the course	mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Acquisition of basic knowledge and skills in the field of biochemistry: structure and function of proteins, structure and function of carbohydrates, structure and function of lipids, structure and function of nucleic acids.					
Course enrolment requirements and entry competences required for the course	-					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>1. Describe the structure of biological molecules/macromolecules and connect the properties of individual functional groups, as well as the properties of entire biological molecules/macromolecules with their function. *</p> <p>2. Describe the course of the enzyme reaction, mechanisms of enzyme catalysis and enzyme inhibition. *</p> <p>3. Explain and apply the basic principles that connect the structure and function of specific groups of proteins. *</p> <p>4. Give examples and explain disorders of the structure/localization/activity of biological macromolecules that lead to the development of diseases or are used for diagnosis/treatment of diseases. *</p> <p>* LO from set of LO Biological molecules and macromolecules</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>LECTURES:</p> <p>The history of biochemistry. The origin of life. (2) Water, bioelements, biomolecules and chemical bonds in living organisms. (2). Amino acids (1). Buffers & Buffer systems. (1). Proteins. Protein conformation. (2) Protein sequencing. (1) Protein function. Collagen & Elastin. (1) Hemoglobin & Myoglobin. (2) Isolation and characterisation of proteins. (1) Enzymes. Enzyme kinetics. Enzyme inhibition. (2) Regulation of enzyme activity. (1) Coenzymes and Cofactors. (2) Carbohydrates. Glycosylated proteins (2) Lipids. Lipoproteins. Steroids. (3). Biological membranes. Transport across membranes. (2) Nucleotides and nucleic acids. DNA replication. Transcription. Translation (3) Protein modifications and protein transport. (2)</p> <p>EXERCISES:</p> <p>The potentiometric titration of amino acids (3) Quantitative determination of proteins by Bradford method. (3) The enzyme kinetics: determination v_{max} and K_m. (3) The properties of carbohydrates and qualitative tests for carbohydrates (3) Lipid-isolation and detection of phospholipids from egg yolk (3)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			

Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	0.5	Research		Practical training	
	Experimental work	0.5	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam	1,0	(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	After the class, students write a written exam. The grade will be formed using the classic (Positive test: sufficient: 61-70; good: 71-80; very good: 81-90; excellent: 91-100 points) or relative grading method. After the written exam, the oral part of the exam follows. The overall grade is also influenced by the success achieved in the experimental part of the class (10%). In case the student is not satisfied with the achieved success, he can reject the grade and take the written exam or only the oral part of the exam within the new exam period.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	D. L. Nelson, M. M. Cox, A. A. Hoskins: Lehninger Principles of Biochemistry, 8th Ed, W.H. Freeman and Company, 2021.					
	L. Stryer, J. M. Berg, J. L. Tymoczko, G. J. Gatto Jr.,: Biochemistry. Ninth Ed, W.H. Freeman & Company, 2019.					
	R. K. Murray, D. K. Granner, P. A. Mayes, V. W. Rodwell: Harper`s Illustrated Biochemistry, 26th Ed, Lange Medical Books/McGraw-Hill, Medical Publishing Division, 2000.					
	S K Sawhney, R ingham: Introductory Practical Biochemistry. Alpha Science International Ltd., Harrow, U.K. 2008					
	Olivera Politeo: Biokemijski praktikum, interna skripta.					
Optional literature (at the time of submission of study programme proposal)	PowerPoint presentations					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching activity and teaching quality -Analysis of the passing of examinations - Reports of the teaching committee, teaching supervision committee, and quality improvement committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Physical Chemistry				
Code	FAR107	Year of study	1 year			
Course teacher	Assoc. Prof. Renato Tomaš	Credits (ECTS)	6.5			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			45	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>The aims of the course are to enable students to:</p> <ul style="list-style-type: none"> - understand basic concepts, laws and principles of thermodynamic and kinetic approaches to physical and chemical changes, - resolve different physicochemical problems, - perform measurements in the laboratory individually or in a team, present and process measurement data, - apply acquired knowledge and skills in professional and specialist courses, 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain the basic principles of thermodynamics.* 2. Explain the basic principles of electrochemistry.* 3. Explain the basic principles of chemical kinetics.* 4. Explain the properties of surfaces and dispersed systems.* 5. Explain the basic principles of spectroscopy.* 6. Explain the basic principles of instrumental measurement techniques in the field of physical chemistry.* <p>*LO from set of LO Principles of Physical Chemistry</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>✓ 45 hours of lectures:</p> <p>Introduction: Physical chemistry - course contents. Basic terms. System and surroundings. Intensive and extensive thermodynamic variables. Progress of the reaction. Zeroth law of thermodynamics. (2 hours)</p> <p>Properties of gases: The perfect gas equation of state. The ideal gas temperature scale. Ideal gas mixtures and Dalton's law. The kinetic model of gases. Real gases. The van der Waals equation of state. (2 hours)</p> <p>First law of thermodynamics: Work and heat. Internal energy. Enthalpy. Heat capacities. Joule-Thomson expansion. Adiabatic processes with gases. Thermochemistry. Enthalpy of formation. Calorimetry. (4 hours)</p> <p>Second and third laws of thermodynamics: Direction of spontaneous change. Entropy as a state function and the second law. Entropy changes in system and surroundings. Entropy changes in irreversible processes. Entropy change accompanying a phase transition. Entropy of mixing ideal gases. Calorimetric determination of entropies and the third law. Gibbs energy. Properties of the Gibbs energy. (6 hours)</p> <p>Phase equilibria - pure substances: Condition of stability. Variation of Gibbs energy with pressure. Variation of Gibbs energy with temperature. Phase diagrams, phase boundaries and location of phase boundaries. The phase rule. Significance of the chemical potential. Fugacity. (3 hours)</p> <p>Properties of mixtures: Partial molar properties. Gibbs-Duhem equation. The chemical potentials of liquids. Spontaneous mixing. Ideal solutions. Ideal-dilute</p>					

	<p>solutions. Real solutions: activities. Colligative properties. Phase diagrams of mixtures. (3 hours)</p> <p>Chemical equilibrium: Homogeneous and heterogeneous reactions. The reaction Gibbs energy. Reactions at equilibrium. Equilibrium constants and determination of equilibrium constants. Standard reaction Gibbs energy. Effect of temperature on the equilibrium constant. Effect of pressure, initial composition, and inert gases on the equilibrium composition. (4 hours)</p> <p>Ionic equilibria: Activity of electrolytes. Debye-Hückel theory. Proton transfer equilibria. Salts in water. Solubility equilibria. (3 hours)</p> <p>Electrochemistry: Ions in solution and migration of ions. Conductivity of electrolyte solutions. Viscosity. Strong and weak electrolytes. The drift speed. Ion mobilities. Mobility and conductivity. Measurement of transport numbers. Electrochemical cells. Varieties of cell. The cell reaction and electromotive force. Cells at equilibrium. Standard potentials. Potentiometric titrations. (4 hours)</p> <p>Chemical kinetics: Empirical chemical kinetics. Reaction rates. Rate laws and rate constants. Reaction order. Half-lives and time constants. The temperature dependence of reaction rates. The relation between rate constants and equilibrium constants. Parallel and consecutive reactions. Michaelis-Menten mechanism. (3 hours)</p> <p>Properties of surfaces: Properties of liquid surfaces. Adsorption on solid surfaces. Adsorption isotherms. Laser light scattering method. Catalytic activity at surfaces. (2 hours)</p> <p>The theory of disperse systems: Molecular disperse system. Colloidal disperse system. Coarse disperse system. Physical stability of disperse systems. Kinetic properties of disperse systems. Sedimentation rate. Viscosity. Electrical properties of disperse systems. (2 hours)</p> <p>Methods of characterizing pharmaceuticals: Crystalline and amorphous solids. Solvates and hydrates. X-ray diffraction methods. Thermogravimetric analysis. Differential scanning calorimetry. IR-spectroscopy. (3 hours)</p> <p>✓ 15 hours of seminars: Solving numerical problems in physical chemistry.</p> <p>✓ 30 hours of experimental work: By working out 6 exercises student evidences in practice some of the principles presented through lectures and seminars: Coligative properties. Viscosity. Chemical equilibrium. Conductivity and conductometric titration. Potentiometric redox titration. Kinetics of inversion saccharose by polarimetric method.</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is</i>	Class attendance	2.0	Experimental work			
	Experimental work	1.0	Report		(Other)	
	Consultations	0.2	Seminar essay		(Other)	
	Tests	1.0	Oral exam	1.3	(Other)	

<i>equal to the ECTS value of the course)</i>	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Continually evaluation: (success (%) / share in evaluating (%): <ul style="list-style-type: none"> • presence and activities in the classroom: (70 - 100 / 10) • laboratory exercises: (100 / 20) • first partial test: (60 - 100 / 35) • second partial test: (60 - 100 / 35) Final evaluation: (success (%) / share in evaluating (%): <ul style="list-style-type: none"> • written exam with numerical tasks: (50 - 100 / 40) • oral exam: (50 - 100 / 45) prviously activities from continually evaluation: (50 - 100 / 15)					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	H. Moynihan, A. Crean, The Physicochemical Basis of Pharmaceuticals, Oxford University Press, Oxford, New York, 2009.			1		
	R. J. Silbey, R. A. Alberty, M. G. Bawendi, Physical Chemistry, 4 th Edition, John Wiley and Sons, New Jersey, 2005.			1		
	R. Tomaš, Predavanja iz fizikalne kemije za studente farmacije, ppt-prezentacija, 2021.				digitalni zapis	
	P. Atkins, J. de Paula, Elements of Physical Chemistry, 4 th Edition, Oxford University Press, Oxford, 2005.			2		
Optional literature (at the time of submission of study programme proposal)	J. Radošević, V. Sokol, R. Tomaš, P. Bošković, Laboratorijske vježbe iz fizikalne kemije, Udžbenici Sveučilišta u Splitu, Split, 2016.					
	I. Mekjavić, Fizikalna kemija 1, Školska knjiga Zagreb, 1996. I. Mekjavić, Fizikalna kemija 2, Golden marketing, Zagreb, 1999. A. M. Halpern, Experimental Physical Chemistry, A Laboratory Textbook, 2 nd Edition, Prentice Hall, New Jersey, 1997.					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and quality of teaching -Analysis of passing on exams -Reports of the Commission for Teaching, the Commission for Supervision of Teaching Implementation and the Committee for Quality Improvement -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Mathematics and Biostatistics				
Code	FAR108	Year of study	1.			
Course teacher	Asst. Prof. Sanja Tipurić-Spužević, Prof. Ana Marušić	Credits (ECTS)	4.0			
Associate teachers	Branka Gotovac, lecturer Prof. Ana Jerončić, Ivan Buljan, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			30	15	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to introduce the students to elements of differential calculus and principles of biomedical statistics and their use in problem tasks from the field of pharmacy					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Recognise and draw graphs of main functions, determine the domain of complex functions. 2. Calculate the derivations of functions. 3. Apply the differential calculus in different problems related to the study of functions and their graphs. 4. Calculate and graphically present the empirical distribution of frequencies of qualitative and quantitative statistical data for descriptive statistics, and calculate the measure of central tendency and dispersion. * 5. Explain the principles of probability theory and some of its theoretical distributions.* 6. Estimate the expectations and variance of the population based on a sample.* 7. Employ adequate statistical tests (parametric and non-parametric), including all steps in statistical analysis.* 8. Explore the existence and level of association of two or more biostatistical characteristics.* <p>*LO from set of LO Biostatistics</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Mathematics (10 L, 10 S)</p> <p>1. Day Functions: The concept of a function. The composition of a function. Inverse function. (2 h lectures) The area of function definition. Analysis of function graphs. (2 h seminars)</p> <p>2. Day Functions: Elementary functions. Limes and function continuity (3 h lectures)</p> <p>3. Day Derivations and their applications: The concept of derivation. Geometrical and physical interpretation. Derivations techniques. Theorems of the differential calculus. Function extremes. (3 h lectures)</p> <p>4. Day Application of basic derivation rules and basic derivation formulas. (2 h seminars)</p>					

	<p>Inflection. Asymptotes. Analysis of the flow and drawing of the function graph. (2 h lectures)</p> <p>5. Day Tangent and normal. Monotony and extremes. Curvature. L'Hospital rule (4 h seminars)</p> <p>6. Day Asymptotes. Testing the flow. (2 h seminars)</p> <p>Biostatistics (20 P, 5 S, 15 V)</p> <p>1. Day Introduction to biostatistics (2 h lectures), Principles of biostatistics (1 h seminars).</p> <p>2. Day Descriptive statistics: measures of central tendency (3 h lectures) Calculation of the measures of central tendency in Excel i jamovi (3 h practicals)</p> <p>3. Day Descriptive statistics: measures of dispersion (3 h lectures) Calculation of measures of dispersion in Excel i JAMOMI (3 h practicals)</p> <p>4. Day Sampling (3 h lectures) Sample size calculation (1 h seminars)</p> <p>5. Day Precision (3 h lectures) Standard error and confidence interval (1 h seminars) Calculating standard error and confidence interval (3 h practicals)</p> <p>6. Day Statistical tests and statistical significance (3 h lectures) Statistical tests and hypothesis testing (1 h seminars) Practicing statistical analysis (3 h practicals)</p> <p>7. Day Effect size measures (3 h lectures) Effect size (2 h seminar) Calculating effect sizes and graphical presentation in jamovi (3 h practicals)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the</i>	Class attendance	2.0	Research		Practical training	0.6

<i>proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	0.7	Oral exam		(Other)	
	Written exam	0.7	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Mathematics: sum of the points from the 1 st colloquium. Biostatistics: a) number of points from 2 colloquia, b) number of points from practical which are submitted by students at the end of each seminar or practical, c) number of point from a written test at the end of the course.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Bradić T, Roki R et al. Matematika za tehnološke fakultete. Više izd. Zagreb: Element			47		
	Demidovič BP, Zadaci i riješeni primjeri iz više matematike. Više izd. Zagreb: Tehnička knjiga			5		
	B. Gotovac, Matematika 1, Kemijsko-tehnološki fakultet u Splitu, Split, 2015.			1	Course web-site	
	B. Gotovac, Matematika-zbirka riješenih zadataka, Kemijsko-tehnološki fakultet u Splitu, Split, 2019.			1	Course web-site	
	Marušić M, urednik. Uvod u znanstveni rad u medicini. 6. izd. Zagreb: Medicinska naklada; 2019.			20		
	Ferenczi E, Muirhead N. Statistika i epidemiologija u jednom potezu. Zagreb: Medicinska naklada; 2011.			20		
	Course materials				Merlin online learning platform	
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	Analysis of student evaluation of teaching work and quality of teaching -Analysis of passing on exams -Reports of the Commission for Teaching, the Commission for Supervision of Teaching Implementation and the Committee for Quality Improvement -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Analytical Chemistry I				
Code	FAR109	Year of study	1.			
Course teacher	Asoc. Prof. Lea Kukoč Modun	Credits (ECTS)	6.0			
Associate teachers	Asst. Prof. Franko Burčul Maja Biočić, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	mandatory	Percentage of application of e-learning	0 %			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to introduce students to the processing of measurement, measuring units, expressing concentration, stoichiometry and chemical equilibrium with accent on analytical application. Furthermore, the goal is to familiarize students with the mechanisms and equilibrium of homogeneous chemical reactions and their application in analytical methods of determination.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Define chemical equilibrium and list the types of homogeneous and heterogeneous chemical equilibrium. 2. Calculate the constants of homogeneous chemical equilibrium. # 3. Calculate and predict the course of the titration curve based on homogeneous equilibrium. # 4. Construct titration curves and predict the possibility of using visual indicators. 5. Describe and outline the types of electrochemical articles. 6. Apply the basic principles of the chemical-analytical process in qualitative and quantitative chemical analysis.* 7. Calculate and evaluate analytical data. # <p>*LO from set of LO Introduction to pharmaceutical qualitative and quantitative analysis # LO from set of LO Calculations in analytical chemistry</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures:</p> <p>L 1: The importance of analytical chemistry, the development of analytical chemistry, the role of the analyst in the selection of analytical techniques and solving the problem.</p> <p>L 2: Analytical signal.</p> <p>L 3: Examples of the analysis of real samples, experimental data processing.</p> <p>L 4: Classification of analytical chemistry (chemical analysis, heterogeneous and homogeneous systems, equilibrium and stable state, equilibrium constants, activity, homogeneous and heterogeneous equilibrium is of greater importance in analytical chemistry).</p> <p>L 5: Acid-base equilibrium, strengths of acids and bases, strong acid and bases.</p> <p>L 6: Weak acid and bases, fraction of dissociation.</p> <p>L 7: Buffers, buffer capacity, ionization of drugs.</p> <p>L 8: Polyprotic acid-base equilibrium, pH value of H₂SO₄ solution, acidity and alkalinity.</p> <p>L 9: Quantitative determination, titrations, standard preparation.</p>					

L 10: Acid-base titrations, titration of the strong acid with strong base and strong base with strong acid.
L 11: Titration of the weak acid with strong base and weak base with strong acid.
L 12: Titrations in polyprotic systems.
L 13: Finding the end point with visual indicators and pH electrode. Titration methods recommended by the Pharmacopoeia.
L 14: Titration in nonaqueous solvents.
L 15: Complex formation.
L 16: EDTA, conditional formation constant.
L 17: EDTA titrations.
L 18: The impact of conditional formation constants on the inflection of the EDTA titration curves.
L 19: Auxiliary complexing agents.
L 20: Metal ion indicators. Titration methods recommended by the Pharmacopoeia.
L 21: Redox reaction, Galvanic cells.
L 22: Standard potential, Nernst equation.
L 23: Equilibrium constant, conditional equilibrium constant.
L 24: Calculating the redox equilibrium constant.
L 25: Redox titrations.
L 26: Redox titration based on the simple stoichiometry redox reaction.
L 27: Redox titration based on the complex stoichiometry redox reaction.
L 28: Redox titration based on the complex stoichiometry redox reaction, the effect of pH value, analysis of a mixture.
L 29: Titration methods recommended by the Pharmacopoeia. Adjustment of analyte oxidation state.
L 30: Preparation and standardization of titration standards.

Seminars:

S 1: Experimental data processing (numerical examples).
S 2: Stoichiometry, activity, activity coefficient (numerical examples).
S 3: Strong acid and bases, weak acid and bases, fraction of dissociation (numerical examples).
S 4: Buffers, ionization of drugs, polyprotic acids (numerical examples).
S 5: Titration of the strong acid with strong base and strong base with strong acid (numerical examples, titration curve construction, using of the Excel spreadsheet).
S 6: Titration of the weak acid with strong base and weak base with strong acid (numerical examples, titration curve construction, using of the Excel spreadsheet).
S 7. Titrations in polyprotic systems, finding the end point with visual indicators and pH electrode (numerical examples, titration curve construction, using of the Excel spreadsheet).
S 8: Complex formation, conditional formation constant (numerical examples)..
S 9: EDTA titrations (numerical examples, titration curve construction, using of the Excel spreadsheet).
S 10: Auxiliary complexing agents (numerical examples, titration curve construction, using of the Excel spreadsheet).
S 11: Redox reaction (numerical examples).
S 12: Calculating the redox equilibrium constant (numerical examples).
S 13: Redox titration based on the simple stoichiometry redox reaction (numerical examples, titration curve construction, using of the Excel spreadsheet).

	<p>S 14: Redox titration based on the complex stoichiometry redox reaction, the effect of pH value (numerical examples, titration curve construction, using of the Excel spreadsheet).</p> <p>S 15: Analysis of a mixture (numerical examples, titration curve construction, using of the Excel spreadsheet).</p> <p>Experimental work:</p> <ol style="list-style-type: none"> (5 hours): Basic laboratory operations. (5 hours) Preparing standard solution. (5 hours) Acid-base titration, determination of $\text{H}_2\text{C}_2\text{O}_4$. (5 hours) Finding the end point with pH electrode. Determination of ascorbic acid in pharmaceutical formulations. (5 hours) EDTA titration, determination of Fe^{3+}. (5 hours) Redox titration, determination of Cu^{2+}. 					
Format of instruction	x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		x independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor x team based learning			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance		Research		Practical training	
	Experimental work	5 % (0,3 ECTS)	Report		Test of numerical examples	30 % (1,8 ECTS)
	Essay		Seminar essay		Test of theoretical part	50 % (3,0 ECTS)
	Tests		Oral exam	15 % (0,9 ECTS)	(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>Scoring at the exam consists of three basic parts: scoring the experimental part (minimum score 2, maximum score 4), test of numerical example (minimum score: 18; maximum score: 30) and test of theoretical part (minimum score: 39; maximum score: 65).</p> <p>Students who had attended lectures and seminar in 70 % can take the exam through partial tests: 2 tests of numerical examples (minimum score: 9; maximum score: 15).</p> <p>The rating is formed in accordance with the score ranges: sufficient (60 - 70 points), good (71-80 points) , very good (81-90 points) , excellent (≥ 91 points)</p>					
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media		
	Nj. Radić i L. Kukoč Modun, Uvod u analitičku kemiju, Školska knjiga, Zagreb, 2016.		30			
	D.A. Skoog, D.M. West, F.J. Holler, Osnove analitičke kemije, šesto izdanje (englesko), prvo izdanje (hrvatsko), Školska knjiga, Zagreb, 1999.		40			

	M. Kaštelan-Macan, Kemijska analiza u sustavu kvalitete, Školska knjiga, Zagreb 2003.	5	
Optional literature (at the time of submission of study programme proposal)	<ol style="list-style-type: none"> 1. Analytical Chemistry (A Modern Approach to Analytical Science, Second Edition), R. Kellner, J. M. Mermet, M. Otto, M. Valcarcel and H. M. Widmer (Eds.), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2004. 2. D. A. Skoog, D. M. West, F. J. Holler and S. R. Crouch, Fundamentals of Analytical Chemistry, Eighth Edition, Thompson Brooks/Cole, Belmont, USA, 2004. 3. G. D. Christian, Analytical Chemistry, Sixth Edition, John Wiley & Sons, Inc., Hoboken, 2004. 4. D. Harvey, Modern Analytical Chemistry, McGraw-Hill Higher Education, New York, London, 2000. 5. F. W. Fifield & D. Kealey, Principles and Practice of Analytical Chemistry, Blackwell Science Ltd, Malden MA, London, 2000. 6. M. Kaštelan-Macan, Enciklopedijski rječnik analitičkog nazivlja, FKIT, Mentor, Zagreb 2014. 7. D. G. Watson, Pharmaceutical analysis, Elsevier, London 2005. 8. European Pharmacopoeia 7th edition, European Directorate for the Quality of Medicines & HealthCare, Council of Europe, Strasbourg 2010. 		
Quality assurance methods that ensure the acquisition of exit competences	<p>Analysis of student evaluation of teaching work and quality of teaching</p> <ul style="list-style-type: none"> -Analysis of passing on exams -Reports of the Commission for Teaching, the Commission for Supervision of Teaching Implementation and the Committee for Quality Improvement -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Human Anatomy and Histology				
Code	FAR110	Year of study	1			
Course teacher	Assoc. Prof. Sandra Kostić	Credits (ECTS)	5.5			
Associate teachers	Prof. Damir Sapunar, Assoc. Prof. Snježana Mardešić, Prof. Ivica Grković, Prof. Ana Marušić, Prof. Katarina Vukojević, Prof. Katarina Vilović, Assoc. Prof. Natalija Filipović, Assoc. Prof. Irena Pintarić	Type of instruction (number of hours)	L	S	E	F
			30	15	30	0
Status of the course	Mandatory	Percentage of application of e-learning	0%			
COURSE DESCRIPTION						
Course objectives	<ul style="list-style-type: none"> - Acquiring knowledge on systemic and topographic human anatomy; - Application of general anatomical principles and concepts to different anatomical units; - Acquiring knowledge on the development and normal histological structure of the human body on the level necessary for further successful understanding of normal body functions and pathological changes, at the microscopic level. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Identify the morphological characteristics of tissues and organs. # 2. Recognize the morphological changes of tissue at the microscopic level. # 3. Recognize pathological tissue changes at the microscopic level. # 4. Describe and explain the basics of the development of the human body, and list and explain examples of anomalies in the development of the human body. 5. Describe the anatomical structure of organs and organ systems using appropriate anatomical terminology.* 6. Connect the peculiarities of the structure of the anatomical structures of the body with the function.* 7. Distinguish the peculiarities of the structure of individual organs.* <p>*LO from LO Fundamentals of Anatomy # LO from LO Fundamentals of Histology</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>HISTOLOGICAL PART:</p> <ol style="list-style-type: none"> 1. Histological techniques 1h (L) 2. Epithelium; Skin 1h (L) 2h (P) 3. The basics of human embryo development, embryonic and fetal period; congenital malformations; menstrual cycle 2h (S) 4. Supporting tissues: connective, bone, cartilage; healing and regeneration; blood and lymphatic system 2h (L), 2h (S), 2h (P) 5. Morphological basis of tissue contractility; morphological bases of tissue excitability (muscle and nerve tissue) 2h (L), 2h (P) 6. Neuroendocrine system 2h (S) 7. General structure of the digestive tract (esophagus and stomach, small and large intestine); glands connected to the digestive system (liver and pancreas), kidney 2h (L), 2h (S), 2h (P) 8. Male and female reproductive system, placenta 2h (L), 2h (P) 9. Respiratory system 2h (S) 					

	ANATOMICAL PART: 1. Introduction to anatomy, general principles of bone structure, joints, muscles 2h (L) 2. Bones and joints 2h (S), 2h (P) 3. Muscles of the head, torso and limbs 2h (L), 2h (S) 4. Heart and blood circulation 2h (L) 5. Blood vessels of large and small circulation 2h (S) 6. Heart and visceral systems 2h (P) 7. Organs of the digestive tract 2h (L) 8. Blood supply to the digestive system, portal vein system 2h (S) 9. Glands of the digestive system 2h (L), 2h (S) 10. Respiratory system 2h (L), 2h (S) 11. Urinary organs 2h (L), 2h (S) 12. Female and male reproductive organs 2h (L) 13. Endocrine system 2h (S) 14. Characteristics of the central nervous system 2h (L) 15. Morphological bases of organization of the nervous system 2h (S) 16. Nervous system 2h (P) 17. Sensory organs 2h (L), 1h (S)					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training	1.5
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	4.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>Class attendance is mandatory and passing the oral colloquium is required if the student is absent, a maximum of 20% of the total teaching. The exam consists of 3 parts, a written part from the histology, written part from the anatomy and practical exam containing bot histological and anatomical units.</p> <p>In order to access the practical part of the exam, it is necessary to pass both written parts (anatomical and histological). The three components of the exam are evaluated differently, as the final grade is the ponder of: histology (30% of the grade), anatomy (45%) and practical exam (25%).</p> <p>The written exam in histology contains 35 questions (10 questions in embryology and 25 questions from histology). The written exam in the anatomy section contains 45 questions.</p> <p>The practical exam in the knowledge of anatomical and histological specimens consists of 15 images, of which 5 are histological specimens and 10 are anatomical. Students need to recognize the organ or tissue and the detail marked with a certain number, an arrow or a square.</p> <p>The total percentage of correct answers required for a positive grade is 60%, and on each of the exams (written and practical tests).</p>					

	Title	Number of copies in the library	Availability via other media
Required literature (available in the library and via other media)	Saraga-Babić M, Puljak L, Mardešić S, Kostić S, Sapunar D. Embriologija i histologija čovjeka. Sveučilišni odjel zdravstvenih studija, Sveučilište u Splitu, 2014.	5	
	Sapunar D, Saraga Babić M. Histološki atlas – CD izdanje. Split: Medicinski fakultet u Splitu		Yes, online
	S. Bajek, D. Bobinac, R. Jerković, Malnar, I. Marić, Sustavna anatomija čovjeka, Udžbenici Sveučilišta u Rijeci, Rijeka, 2007.; F. H. Netter, Atlas	5	
Optional literature (at the time of submission of study programme proposal)	<ul style="list-style-type: none"> - Junqueira LC, Carneiro J, Kelley RO. Osnove histologije. Zagreb: Školska knjiga. - Sadler TW. Medicinska embriologija. Zagreb: Školska knjiga. - J. Sobotta, Histološki atlas, Zagreb, Naklada Slap 2004.; J. Sobotta, Atlas anatomije čovjeka, Svezak 1 & 2, Naklada Slap, 2000 		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and quality of teaching -Analysis of passing on exams -Reports of the Commission for Teaching, the Commission for Supervision of Teaching Implementation and the Committee for Quality Improvement -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Molecular Biology				
Code	FAR111	Year of study	1			
Course teacher	Asst. Prof. Jelena Korac Prlic	Credits (ECTS)	4.0			
Associate teachers	Prof. Janoš Terzić Prof. Ivana Marinović Terzić Prof. Ivana Novak Nakir Asst. Prof. Jasminka Omerović	Type of instruction (number of hours)	L	S	E	F
			22	22	20	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Introduction to the basic principles of molecular biology and genetics, as well as the basic laboratory techniques used in scientific work. Encouraging independent reading and understanding of scientific articles. Encouraging critical thinking in scientific data analysis.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. To describe the details of the organization, maintenance and rearrangement of the genome and relate them to the patterns of inheritance.* 2. To describe different levels of regulation of gene expression and methods of analyzing gene interactions and analyzing entire genomes, proteomes and transcriptomes.* 3. To apply the principles of the transfer of genetic information through the processes of replication, transcription, protein synthesis and generation and repair of genetic errors.# 4. To explain the intercellular interactions and the principles of cellular signaling, with an emphasis on signal transmission and multiplication, integration of signaling pathways and achieving specificity.* 5. To describe the cell cycle and its control mechanisms.# 6. To connect the mechanisms of DNA damage formation and repair of DNA damage and the influence of extracellular signals on cell death, survival, and regulation of the cell cycle.* 7. To explain how cell defects at different levels lead to the formation of cancer cells and the occurrence of certain diseases and to evaluate the basis of molecular targets for drugs.* 8. To design, implement, and determine the outcomes of experiments, including the use of molecular biology methods in scientific research, diagnosis and treatment of diseases, and drug development.* <p>*LO from set of LO Molecular Biology # LO from set of LO Cellular processes</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><i>Lectures:</i></p> <ol style="list-style-type: none"> 1. Introduction to molecular biology. 2. Human genome. Telomeres. 3. Organization of cell genomes. DNA replication. 4. RNA genes. Synthesis and processing of RNA. ncRNA. 5. Regulation of translation. 6. Protein degradation (UPS, autophagy) 7. Epigenetics. RNAi. 8. Genomics and proteomics. Evolution. 9. Genetic engineering. 					

	<p>10. Genetically modified organisms. 11. Methods in molecular biology (cloning, genetic engineering, protein and DNA research)</p> <p><i>Seminars:</i></p> <ol style="list-style-type: none"> 1. DNA repair 2. Homologous recombination and rearrangement of DNA. 3. Protein processing and regulation. 4. Cell signalling #1 5. Cell signalling #2 6. Cell signalling #3 7. Cell Cycle #1 8. Cell Cycle #2 9. Apoptosis 10. Tumors #1 11. Tumors #1 <p><i>Practical:</i></p> <ol style="list-style-type: none"> 1. Experimental models – mouse. RNA, DNA and protein isolation #1 2. RNA, DNA and protein isolation #2 3. Transformation of bacteria 4. Isolation of proteins from bacteria 5. Cell culture, protein isolation, GFP transfection 6. GFP transfection, immunofluorescence 7. Protein electrophoresis 8. Western blot 9. GMO detection from food #1 10. GMO detection from food #2 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input checked="" type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1.0	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	During the classes, active participation in seminars is assessed, and the majority of the grade consists of points earned in the written exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	G. M. Cooper, R. E. Hausman, 2004: Stanica - molekularni pristup, Treće izdanje, Medicinska naklada, Zagreb 2004			15		

	Lecture materials		Moodle/Merlin platform
Optional literature (at the time of submission of study programme proposal)	-		
Quality assurance methods that ensure the acquisition of exit competences	Analysis of student evaluation of teaching work and quality of teaching -Analysis of passing on exams -Reports of the Commission for Teaching, the Commission for Supervision of Teaching Implementation and the Committee for Quality Improvement -External evaluation		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Pharmaceutical nomenclature				
Code	FAR112	Year of study	1st			
Course teacher	Prof. Siniša Tomić.	Credits (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	T
			30	0	0	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>1 Introduces the student to the way pharmacists organize their nomenclature, which is based on the tradition of Croatian pharmaceutical nomenclature</p> <p>2 Familiarizing the student with the terminological requirements of the pharmaceutical nomenclature, i.e. the compatibility of the nomenclature with the profession and language requirements, because the pharmaceutical nomenclature is a subset of the standard Croatian language</p> <p>3 Learn and acquire skills in writing pharmaceutical names for substances for pharmaceutical use and for standardized expressions</p>					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Apply linguistic theories in pharmacy for the purpose of professional speech or expression, i.e. for dexterous and professional composition and execution of words in pharmaceutical science and pharmaceutical practice. 2. Write correctly the names used for substances for pharmaceutical use for chemical elements and compounds, ions, radicals, isomers, herbal drugs and biological drugs 3. Use the appropriate standardized term for pharmaceutical forms, routes of administration, and containers and closures in pharmacy 4. Handle the Croatian Pharmacopoeia in terms of the use of pharmaceutical nomenclature for pharmaceutical substances and standardized terms 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures (30 student hours)</p> <p>1 Introduction to pharmaceutical nomenclature, pharmaceutical and medical nomenclature, development of pharmaceutical language (2 h)</p> <p>2 Pharmaceutical lexicography, properties of standard language, loanwords and foreign words, semi-compounds and nomenclature rules (2 h)</p> <p>3 Formation of names and adjectives: chemical elements, isotopes, atoms, collective names of similar atoms, cations, anions, addition compounds (4 h)</p> <p>4 Organic and inorganic acids, esters, amines and ammonium salts (4 h)</p> <p>5 Names in the Croatian Pharmacopoeia (2 h)</p> <p>6 Names in pharmacognosy, names of herbal drugs and herbal preparations (4 h)</p> <p>7 Non-proprietary names of pharmaceutical substances (INN), ATK division of drugs, active substances and packaging (2 h)</p> <p>8 Pharmacopoeia spelling: punctuation, numerical items (2 h)</p> <p>9 Names of immunological drugs for use on humans and animals (2 h)</p> <p>10 Names of radiopharmaceuticals and blood derivatives (2 h)</p> <p>11 Names for pharmaceutical forms, routes of administration, surgical and bandage material/medical products</p>					

Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input checked="" type="checkbox"/> consultation		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.				
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training
	Experimental work		Report		(Other)
	Essay		Seminar essay		(Other)
	Tests		Oral exam		(Other)
	Written exam	1.0	Project		(Other)
Grading and evaluating student work in class and at the final exam	Regular attendance of classes is a condition for taking the exam in Pharmaceutical Nomenclature. The exam is a written test that contributes 80% of the grade. 10% of the grade goes to regular class attendance, and 10% to class activity				
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media
	Hrvatska farmakopeja s komentarima 2007			5	
	Hrvatska farmakopeja 2007			0	Yes
Optional literature (at the time of submission of study programme proposal)	<p>V. Grdinić, Hrvatsko farmakopejsko nazivlje: prinosi za hrvatsku jezičnu normu i kodifikaciju u ljekopisu, Hrvatski zavod za kontrolu lijekova, Zagreb, 1995.;</p> <p>V. Grdinić, Terminološko-rječnički vodič za HRF, Agencija za lijekove i medicinske proizvode, Zagreb, 2007.;</p> <p>V. Grdinić, R. Jurišić, I. Šugar, Enciklopedijski englesko-hrvatski farmakognzijski rječnik farmakopejskog nazivlja, Hrvatski zavod za kontrolu lijekova, Zagreb, 1999.</p>				
Quality assurance methods that ensure the acquisition of exit competences	<p>Analysis of student evaluation of teaching work and quality of teaching</p> <p>-Analysis of passing on exams</p> <p>-Reports of the Commission for Teaching, the Commission for Supervision of Teaching Implementation and the Committee for Quality Improvement</p> <p>-External evaluation</p>				
Other (as the proposer wishes to add)					

NAME OF THE COURSE		Physical Education and Sports I and II				
Code	FARTJ1-2	Year of study	1 and 2			
Course teacher	Hrvoje Ljubičić, prof.	Credits (ECTS)	0			
Associate teachers		Type of instruction (number of hours) per semester	L	S	E	F
			0	0	60	
Status of the course	mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The objective of the course is to provide the student the basic knowledge from various sports, especially in the field of fitness, with the introduction of basic exercises necessary for maintaining physical health.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe basic movements in certain sports (fitness). 2. Identify individual sports. 3. Identify and apply the correct performing of exercises. 4. Combine different exercises into a structured workout. 					
Course content broken down in detail by weekly class schedule (syllabus)	Getting knowledge about training operators and the fitness basics; determination of the individual's morphological status and motor skills; Learning weightlifting techniques (squat, deadlift, bench press); basics of cardio exercise, running, HIIT, aerobic cycle training					
Format of instruction	<input type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the Medical school in Split					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	X	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	Class attendance and activity					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Mišigoj Duraković M. Tjelesna aktivnost i zdravlje.Zagreb;Kineziološki fakultet; 1999					

Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Medical English I to V				
Code	FAREN1-5	Year of study	1., 2., 3., 4., 5.			
Course teacher	Sonja Koren, prof.	Credits (ECTS)	0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			0	20	0	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The objective of the course is to provide the student with basic knowledge of the English language					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Explain the basics of medicine and pharmacy in the English language					
Course content broken down in detail by weekly class schedule (syllabus)	Through seminars the students cover the selected topics from the study programme of that year of study and adopt appropriate terminology in the English language					
Format of instruction	<input type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	x	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	x	(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam						
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Glendinning, E.H., Howard, R. <i>Professional English in Use - Medicine</i> . Cambridge: Cambridge University Press; 2007 (selected chapters)					

	Chabner DE. The Language of Medicine. 8th edition. St. Louis: Saunders Elsevier; 2007		
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Analytical Chemistry II				
Code	FAR 201	Year of study	2			
Course teacher	Asoc. Prof. Lea Kukoč Modun	Credits (ECTS)	6.0			
Associate teachers	Asst. Prof. Franko Burčul, Maja Biočić, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	The goal of course is to familiarize students with the mechanisms and equilibrium of heterogeneous chemical reactions and their applications in analytical methods for determining and separation process. Theoretical basis of kinetic methods of analysis will be explained, and the					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Distinguish types of heterogeneous balances and define analytical methods of determination and/or separation based on them. 2. Apply heterogeneous chemical equilibria to separate analytes of interest. 3. Calculate the constants of heterogeneous chemical equilibria. # 4. Calculate and predict the course of the titration curve based on heterogeneous equilibrium. # 5. Explain sampling and sample preparation.* 6. Carry out qualitative and quantitative analysis using classic chemical methods.* 7. To compare kinetic methods of analysis and classical analytical methods based on thermodynamic equilibrium, from the aspect of selectivity and possibility of application. <p>*LO from set of LO Introduction to pharmaceutical qualitative and quantitative analysis #LO from set of LO Calculations in Analytical Chemistry</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures:</p> <p>L 1,2: Heterogeneous equilibrium.</p> <p>L 3,4: Equilibrium between solid, slightly soluble salts and their ions.</p> <p>L 5,6: Ionic strength effect, common ion effect and the effect of parallel reactions on salt solubility.</p> <p>L 7,8: Separation by precipitation.</p> <p>L 9,10: Gravimetric analysis.</p> <p>L 11,12: Precipitation gravimetry, properties of precipitate and precipitation requirements.</p> <p>L 13,14: Precipitation titrations, End –point detection.</p> <p>L 15,16: : Extraction</p> <p>L 17,18: Simple extraction with parallel reactions.</p> <p>L 19,20: Chromatography, planar chromatography.</p> <p>L 21, 22: Column chromatography.</p> <p>L 23,24: Review of modern chromatographic techniques.</p> <p>L 25,26: Ion exchange and their analytical application.</p>					

	<p>L 27,28: Kinetic method analysis. L 29,30: Review of methods of determination and separation recommended by the Pharmacopoeia.</p> <p>Seminars: S 1: Heterogeneous equilibrium (numerical examples). S 2: Equilibrium between solid, slightly soluble salts and their ions (numerical examples) S 3: Ionic strength effect, common ion effect and the effect of parallel reactions on salt solubility (numerical examples). S 4: Separation by precipitation (numerical examples). S 5, 6: Gravimetric analysis (numerical examples). S 7: Precipitation titrations (numerical examples). S 8: Extraction (numerical examples). S 9: pH and complex formation effects on extraction efficiency (numerical examples). S 10,11: Chromatography (numerical examples). S 12: Chromatography (Pharmacopoeia). S 13: Ion exchange (numerical examples). S 14: Kinetic method analysis (numerical examples). S 15: Pharmacopoeia</p> <p>Experimental work: 1. 5 hours: Basic laboratory activities, gravimetry. 2. 5 hours: Gravimetric determination of nickel ions. 3. 3 hours: Titrations based on the formation of a poorly soluble precipitate. 4. 2 hours: Chromatography 5. 3 hours: Extraction 6. 2 hours: Ion exchange 7. 5 hours: Qualitative chemical analysis, sequential separation and proof of cations 8. 5 hours: Qualitative chemical analysis, sequential separation and proof of anions</p>					
Format of instruction	x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		x independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor x team based learning			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance		Research		Practical training	
	Experimental work	5 % (0,3 ECTS)	Report		Test of numerical examples	30 % (1,8 ECTS)
	Essay		Seminar essay		Test of theoretical part	50 % (3,0 ECTS)
	Tests		Oral exam	15 % (0,9 ECTS)	(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student	Scoring at the exam consists of three basic parts: scoring the experimental part (minimum score 2 , maximum score 4), test of numerical example (minimum score:					

work in class and at the final exam	18; maximum score: 30) and test of theoretical part (minimum score: 39; maximum score: 65). Students who had attended lectures and seminar in 70 % can take the exam through partial tests: 2 tests of numerical examples (minimum score: 9; maximum score: 15). The rating is formed in accordance with the score ranges: sufficient (60 - 70 points), good (71-80 points) , very good (81-90 points) , excellent (≥91points)		
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Nj. Radić i L. Kukoč Modun, Uvod u analitičku kemiju, Školska knjiga, Zagreb, 2016.	30	
	D. A. Skoog, D. M. West, F. J. Holler, Osnove analitičke kemije, šesto izdanje (englesko), prvo izdanje (hrvatsko), Školska knjiga, Zagreb, 1999.	40	
	M. Kaštelan-Macan, Kemijska analiza u sustavu kvalitete, Školska knjiga, Zagreb 2003.	5	
Optional literature (at the time of submission of study programme proposal)	<ol style="list-style-type: none"> 1. Analytical Chemistry (A Modern Approach to Analytical Science, Second Edition), R. Kellner, J. M. Mermet, M. Otto, M. Valcarcel and H. M. Widmer (Eds.), Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2004. 2. D. A. Skoog, D. M. West, F. J. Holler and S. R. Crouch, Fundamentals of Analytical Chemistry, Eighth Edition, Thompson Brooks/Cole, Belmont, USA, 2004. 3. G. D.Christian, Analytical Chemistry, Sixth Edition, John Willey & Sons, Inc., Hoboken, 2004. 4. D. Harvey, Modern Analytical Chemistry, McGraw-Hill Higher Education, New York, London, 2000. 5. F. W. Fifield & D. Kealey, Principles and Practice of Analytical Chemistry, Blackwell Science Ltd, Malden MA, London, 2000. 6. M. Kaštelan-Macan, Enciklopedijski rječnik analitičkog nazivlja, FKIT, Mentor, Zagreb 2014. 7. D. G. Watson, Pharmaceutical analysis, Elsevier, London 2005. 8. European Pharmacopoeia 7th edition, European Directorate for the Quality of Medicines & HealthCare, Council of Europe, Stasbourg 2010. 		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Organic Chemistry I				
Code	FAR202	Year of study	2			
Course teacher	Prof. Igor Jerković	Credits (ECTS)	7.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			45	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Acquiring basic knowledge about modern organic chemistry, understanding the structure and properties of organic compounds, nomenclature of organic compounds, types of isomers, understanding the mechanisms of organic reactions of addition, substitution, elimination and rearrangement.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe the basic concepts and typical mechanisms of organic reactions of addition, elimination, substitution and rearrangement. 2. Recognize the type of organic compound with regard to the priority functional group and predict the name of the organic compound using current IUPAC rules.* 3. Recognize stereochemical properties and determine the configuration of organic compounds.* 4. Demonstrate basic procedures in the organic-chemical laboratory. 5. Analyze the mechanisms of basic reactions in organic chemistry and point out the structural and electronic characteristics of the substrate that affect them.# 6. Predict the structure of less complex organic compounds based on nuclear magnetic resonance spectra.# <p>* LO from set of LO Fundamentals of Organic Chemistry # LO from set of LO Mechanisms of reactions, methods of preparation and identification of organic compounds</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Introduction. A brief historical overview. Contemporary organic chemistry. Bonding of atoms in organic molecules. Electronegativity and bond types. Bond lengths and energies. (2 hours); Hybrid atomic orbitals (sp^3, sp^2 and sp). Molecular orbitals (σ- and π-bonds), polar and non-polar covalent bonds. Connection angles. Examples of organic molecules (orbital picture) with single, double and triple bonds. (2 hours); Physical properties, molecular structure and intermolecular bonds (dipole-dipole, Wan der Waals and hydrogen bonds). Solubility and organic solvents. Presentation of organic structures. (3 hours)</p> <p>Division and nomenclature of organic compounds. Functional groups and priority order. Alkanes. Alkenes. Alkines. Aromatic hydrocarbons. Examples of nomenclature of branched acyclic and cyclic and aromatic hydrocarbons. Alcohols. Phenols. Thiols. (4 hours); Ethers. Thioethers. Amines. Organohalogen compounds. Aldehydes. Ketones. Carboxylic acids. Derivatives of carboxylic acids (acyl halides, anhydrides, esters, amides and nitriles). (4 hours); Examples of nomenclature of different functional groups. (3 hours)</p> <p>Types of isomers. Display of molecules in space. Detailed division of isomers. Constitutional isomers. Index of hydrogen deficiency (IHD). Conformation and configuration. Stereoisomers. Conformations of acyclic alkanes (conformational</p>					

analysis). Conformations of cycloalkanes (angular tension and heat of combustion) (3 hours); Substituted cycloalkanes. Geometric isomers (*cis*-, *trans*-, *E*-, *Z*-). CIP sequence rule. Examples of geometric isomers of molecules with multiple double bonds. Geometric isomers of cyclic compounds (*cis*-, *trans*- isomers of conformational structures) (4 hours). Symmetry, chirality and achirality. Stereogenic center (chiral center). Enantiomers. Diastereomers. Absolute configuration. CIP system - sequence rule. Fischer projection formulas. Properties of enantiomers. Optical activity. Racemic mixture. Enantiomeric excess. Optical purity. Biological significance of chirality. Examples of chiral biologically active substances.; Separation of racemates (direct crystallization, conversion into diastereomers, chromatographic methods and kinetic resolution). Molecules with more stereogenic centers. Relative configuration of erythro- and threo. Meso compounds (3 hours). Stereoisomers of cyclic compounds. Chiral molecules without a tetrahedral atom. Examples of distinguishing different types of stereoisomers. (3 hours)

Division of organic reactions. Mechanisms. Acid-base reactions. Nucleophiles and electrophiles. Oxido-reduction reactions. Energetics and reaction kinetics. (2 hours)

Nucleophilic substitution on saturated carbon. S_N2-mechanism. S_N1-mechanism. Energy diagrams. Stereochemistry of nucleophilic substitution.; Variables in nucleophilic substitution (leaving group, nucleophile, place of substitution and influence of solvent). Conditions for S_N2- and S_N1-reactions. Competitive reactions. (4 hours); Possibilities of nucleophilic substitution, common nucleophiles and their products. Examples and tasks (4 hours).

Elimination reactions. E1- and E2-mechanism. Conditions for E1- and E2 reactions. Direction of elimination. Stereochemistry of elimination (*syn*- or *anti*-) (3 hours); Competition of elimination and substitution (reaction conditions and examples). Examples of elimination reactions: dehydrogenation-halogenation, dehalogenation of vicinal dihaloalkanes, double dehydrogenation, alcohol dehydration (E1- and E2-mechanism, energy diagrams). (4 hours)

Electrophilic addition. Direction of addition (regioselectivity). Addition stereochemistry (*syn*- or *anti*-). Addition of free radicals. Addition of hydrogen. Halogen addition. Halo(gen)hydrin reaction. Addition of hydrogen halides. Conditions for Markovnikov and anti-Markovnikov addition. (3 hours); Hydration. Oxymercuration/ demercuration. Hydroboration. Epoxidation - hydroxylation. Alkene oxidation with KMnO₄ and OsO₄. Ozonolysis of alkenes. Alkene addition (alkylation). Polymerization (radical type and ionic type). Examples of typical polymers. Additions to alkynes. Examples and tasks (3 hours)

Aromatic and antiaromatic compounds. The structure of benzene. Examples. Mechanism of electrophilic aromatic substitution. Influence of groups on electrophilic aromatic substitution. (3 hours); Substitution of multiply substituted aromatic compounds. Examples and tasks. (3 hours)

Exercises:

1. Safety and rules of conduct in the organic laboratory. Isolation and purification of organic compounds. Recrystallization and determination of melting point. Distillation and determination of boiling point.
2. Steam distillation. Extraction.

	3. Chromatography in the separation of organic compounds. 4. Characterization of organic compounds. Characteristic reactions of functional groups. 5. Oxido-reduction reactions. Preparation of butan-2-one. 6. Nucleophilic substitution on saturated carbon. Preparation of <i>tert</i> -butyl chloride					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	2.0	Research	0	Practical training	0
	Experimental work	1.0	Report	0	(Other)	
	Essay	0	Seminar essay	0	(Other)	
	Tests	0.5	Oral exam	0	(Other)	
	Written exam	3.5	Project	0	(Other)	
Grading and evaluating student work in class and at the final exam	Students can take 2 partial tests during the course. If they do not pass the partial tests, students will be evaluated on a written exam. The grade on the partial tests and the written exam is formed in the following way: 51-60% sufficient (2); 61-75% good (3); 76-88% very good (4); 89-100% excellent (5). The overall grade is formed by adding up all activities (for each activity, the % of success is multiplied by the weight coefficient): 5% x attendance and activity at lectures and seminars + 10% x success in exercises + 43% x success in the 1 st test + 42% x success at 2 nd the test.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	L. G. Wade, <i>Organska kemija</i> , Školska knjiga Zagreb, 2017.				10	
	I. Jerković, A. Radonić, <i>Praktikum iz organske kemije</i> , Udžbenici Sveučilišta u Splitu, KTF-Split, 2009.				0	Yes
	S. H. Pine: <i>Organska kemija</i> , Školska knjiga, Zagreb, 1994.				9	
	Vodič kroz IUPAC-ovu nomenkaturu organskih spojeva, Školska knjiga Zagreb. 2002.				2	
Optional literature (at the time of submission of study programme proposal)	Clayden, Greeves, Warren and Wothers, <i>Organic Chemistry</i> , Oxford University Press, 2001. S. Borčić, O. Kronja, <i>Praktikum preparativne organske kemije</i> , Školska knjiga Zagreb, 1991. Morrison and Boyd, <i>Organic Chemistry</i> , 6th edition, Prentice Hall of India, New Delhi, India, 2002.					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					

Other (as the proposer wishes to add)	
---------------------------------------	--

NAME OF THE COURSE		Pharmaceutical Microbiology				
Code	FAR203	Year of study	2			
Course teacher	Prof. Marija Tonkić	Credits (ECTS)	5.0			
Associate teachers	Prof. Ivana Goić Barišić, Asst. Prof. Anita Novak, Asst. Prof. Katarina Šiško Kraljević, Asst. Prof. Vanja Kaliterna, Asst. Prof. Merica Carev.	Type of instruction (number of hours)	L	S	E	F
			30	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>1. List and describe the basic biological features of the microorganisms that cause it infections in humans, pathogenic properties of these microorganisms, their spread and resistance to environmental conditions and ways of their transmission among humans, the pathogenesis of infections and methods of identification of microorganisms and their sensitivity to antimicrobial drugs.</p> <p>2. Describe the basic mechanisms of human defense against infection and the types of vaccines that are used in the prevention of infections caused by microorganisms.</p> <p>3. Define and describe the mechanisms and spectrum of action of the basic group of antimicrobial drugs and the mechanisms of resistance of microorganisms to antimicrobial drugs.</p>					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Distinguish the biological properties of medically important bacteria, viruses, fungi and parasites and their significance for humans.* 2. List the ways of spread and transfer of microorganisms between people and measures to prevent the spread of infections in the population.* 3. Explain the virulence mechanisms and etiological pathogenesis of infections caused by microorganisms.* 4. Differentiate the modes of action of antimicrobial drugs and connect them with the resistance mechanisms of microorganisms. 5. List the antigens used in vaccines and argue the importance of active immunization in the prevention of infectious diseases and differentiate biocides (antiseptics and disinfectants) by effectiveness. <p>*LO from set of LO Fundamentals of Microbiology</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures (30 student hours):</p> <ol style="list-style-type: none"> 1. Introduction to medical microbiology. Structure, physiology and genetics bacterial cells. Pathogenesis of bacterial diseases. Mechanisms the body's immune response to bacterial infections. Bacterial antigens and vaccines. (4 hours) 2. Antibacterial chemotherapeutic agents. (2 hours) 3. Bacterial resistance to antimicrobial drugs. (2 hours) 4. Sterilization and disinfection. Nosocomial infections and basic principles of surveillance infection. (2 hours) 5. Genera <i>Streptococcus</i>, <i>Staphylococcus</i>, <i>Enterococcus</i>, <i>Neisseria</i>, <i>Legionella</i>, parvobacteria and their role in infections of organ systems. (2 hours) 6. Enterobacteria. Genus <i>Pseudomonas</i>. Curved and spiral bacteria (<i>Vibrio</i>, 					

	<p><i>Campylobacter, Helicobacter, Treponema</i>) and their role in infections of organic systems. (2 hours)</p> <p>7. Anaerobic bacteria. The genera <i>Mycobacterium, Corynebacterium</i> and <i>Bacillus</i> and their role in infections of organ systems. Intracellular bacteria. Bacteria without a cell wall - family <i>Mycoplasmataceae</i>. (2 hours)</p> <p>8. Fungi - structure, reproduction, classification. Pathogenesis of fungal diseases. Antifungal drugs. Yeasts, molds. (3 hours)</p> <p>9. General properties of parasites. Parasites significant in human pathology. Antiparasitic drugs. (3 hours)</p> <p>10. Structure, classification and reproduction of viruses. Effect of virus on the station. Pathogenesis of viral infections. Host defense against viral infections. Antiviral drugs. Vaccines. Prions. (4 hours)</p> <p>11. DNA viruses - <i>Papillomaviridae, Polyomaviridae, Adenoviridae Parvoviridae, Poxviridae</i>, Hepatitis viruses. (2 hours)</p> <p>12. RNA viruses - <i>Picornaviridae, Orthomyxoviridae, Paramyxoviridae, Togaviridae</i> (genus <i>Rubivirus</i>), <i>Retroviridae</i> - HIV virus infections. (2 hours)</p> <p>Exercises (30 student hours):</p> <p>1. Microbiological laboratory – introduction. Basic microscopy of bacterial forms. Principles of bacterial isolation and identification. Staining methods in bacteriology. Cultivation of bacteria. Types of media. (3 hours)</p> <p>2. Testing of the sensitivity of bacteria to antibiotics. Performance, reading and interpretation of the antibiogram (disc-diffusion method, broth dilution, agar dilution, E test). Hand disinfection. Serological methods in bacteriology. (4 hours)</p> <p>3. Principles of cultivation and identification of gram positive cocci. Cultivation and identification of genera <i>Neisseria</i> and <i>Haemophilus. Legionella</i>. (4 hours)</p> <p>4. Identification and serotyping of enterobacteria. <i>Pseudomonas</i>. Cultivation and identification of curved and spiral bacteria. (4 hours)</p> <p>5. Cultivation and identification of anaerobic bacteria. Sample processing for diagnostics of mycobacterial infections. <i>Corynebacterium</i> - cultivation, staining and microscopy. <i>Bacillus</i>. Sterilization control. Basics of mycoplasmas detection. (3 hours)</p> <p>6. Cultivation and identification of fungi. (3 hours)</p> <p>7. Diagnostics of intestinal parasitosis. Microscopy of native, preparations with Lugol's solution and concentrate (MIFC). Micromorphology of cysts of protozoa, helminth eggs and larvae. Graham's test. Diagnostics of echinococcosis and trichinosis. Diagnostics of toxoplasmosis, leishmaniasis and malaria. (3 hours)</p> <p>8. Methods of direct diagnostics of viral diseases. (3 hours)</p> <p>9. Serological and molecular methods in the diagnostics of viral diseases. (3 hours)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	

<i>activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	4.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The exam in the subject Pharmaceutical Microbiology is written. During class, two partial test-exams will be organized. The right to access the partial exam have only students who did not miss classes or were excused and did colloquium. The first partial test contains questions from bacteriology and mycology (50 questions – 50 minutes). The second partial test exam contains questions from parasitology and virology (50 questions – 50 minutes). The percentage of correct answers required for a positive grade for each test exam is 60% (30 points). Passed partial test-exams are recognized as a passed part of the overall exam. The final grade is the mean value of the grades achieved in the partial exams.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Brooks GF, Carroll KC, Butel JS, Morse SA, Mietzner TA, urednici. "Medicinska mikrobiologija (Jawetz, Melnick i Adelberg)", Placebo d.o.o., 2015. (Medical Microbiology. 26th ed. New York: McGraw-Hill; 2013.)			20	http://www.mefst.unist.hr/	
Optional literature (at the time of submission of study programme proposal)	Murray PR, Rosenthal KS, Pfaller MA. Medical Microbiology. 9th ed. Philadelphia: Mosby, Elsevier; 2020.					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> - Analysis of student evaluation of teaching work and teaching quality - Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee - External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Pharmacognosy				
Code	FAR204	Year of study	2.			
Course teacher	Asst. Prof. Josipa Bukić Asoc. Prof. Ani Radonić	Credits (ECTS)	10.0			
Associate teachers	Asst. Prof. Marina Zekić	Type of instruction (number of hours)	L	S	E	F
			60	45	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	1. Acquisition of basic knowledge about herbal drugs and compounds from natural sources that are used as active substances in the pharmaceutical industry. 2. Getting to know the structural characteristics, properties, biological distribution of active substances. 3. Acquiring knowledge about the biological activity of pharmacologically active compounds of plant origin.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Classify natural medicinal substances according to chemical structure and biosynthesis pathway. # 2. Show the chemical structure of natural medicinal substances and connect individual medicinal substances with their natural sources (herbal medicine). # 3. To carry out the proving and determination of natural medicinal substances in herbal medicine. # 4. Explain and apply pharmacopoeial methods of qualitative and quantitative analysis of natural medicinal substances for the purpose of identification and quality control of herbal medicine. # 5. Interpret given pharmacopoeial monographs of herbal medicines. # 6. Define herbal medicines according to the European Pharmacopoeia.* 7. Analyze herbal medicines according to their morphological and anatomical characteristics.* 8. Carry out macroscopic and microscopic identification of herbal medicines according to the corresponding pharmacopoeial monograph.* 9. Classify herbal medicines according to the main chemical groups of natural medicinal substances.* 10. Explain the mechanisms of action of the most common natural therapeutical substances in herbal medicine.* 11. State and interpret the main pharmaceutical application of herbal medicines.* *LO from set of LO Pharmacognosy – herbal medicine # LO from set of LO Pharmacognosy - natural medicinal substances					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: 1. Pharmacognosy and phytopharmacy – definition and objectives. Medicinal drugs of natural origin – definitions, nomenclature, drug forms, drugs constituents. Primary and secondary metabolites – significance in pharmacognosy. Classification of secondary metabolites. Secondary metabolites building blocks. (4 hours) 2. The acetate pathway. Fatty acids and aromatic polyketides. Lipids – properties and classification. Fats and fatty oils – chemical definition and classification. Triglyceride					

biosynthesis. Fatty acids - chemical definition and classification. Saturated, unsaturated, ω -3 and ω -6, essential fatty acids. (4 hours)

3. Localization of fats and fatty oils. Obtaining of fats and oils. Physico-chemical properties of fats and oils. Use of fats and fatty oils in pharmacy. Examples. Waxes – chemical definition. Plant waxes. Animal waxes. Compound lipids - chemical definition. Structure of compound lipids. Classification. Phosphatidylcholines. (3 hours)

4. Shikimate pathway. Fenolics. Basic structural types. Phenylpropanoids. Cinnamic acids. Phenylpropenes. Coumarins. Furocoumarins. Dicoumarins. Phenolic acids. Lignans and lignin. (4 hours)

5. Flavonoids. Biosynthesis. Classification and structural characteristics. Pharmacological action and applications. Examples of flavonoid containing drugs. Biflavonoids. Flavonolignans. Isoflavonoids. (4 hours)

6. Anthocyanins. Examples of anthocyanins containing drugs. Tannins. Condensed and hydrolyzable tannins. Examples of tannins containing drugs. Aromatic polyketides. Quinones – classification, pharmacological action and applications. Naphthoquinones. Examples of naphthoquinones containing drugs. Anthraquinones. Examples of anthraquinones containing drugs. (4 hours)

7. Terpenes. Isoprenic rule. Classification according to the number of isoprene units. Biosynthesis of 2- and 3-IPP starting from mevalonic acid and 1-deoxy-D-xylulose-5-phosphate. Biosynthetic terpenes building blocks (GPP, FPP and GGPP). Hemiterpenes. Monoterpenes (acyclic and cyclic (skeletons of p-menthane, bornane, pinane, thujane, carane), irregular monoterpenes). Sesquiterpenes. (acyclic and cyclic). (5 hours)

8. Typical essential oils and their main constituents. Diterpenes (phytol, taxol, abietic acid, ginkgolides). Sesterterpenes (sclarin, ophiobolin A and F). Triterpenes (squalene, lanosterol, cycloartenol). Tetraterpenes (carotenoids, retinol and dehydroretinol). Steroids. (cholesterol). (5 hours)

9. Alkaloids. Aminoalkaloids (ephedrine, mescaline, colchicine). Piperidine and pyridine alkaloids (coniine, nicotine). Tropane alkaloids (hyoscyamine, scopolamine and cocaine). Quinolizidine alkaloids (sparteine). Isoquinoline alkaloids (berberine, papaverine, morphine, codeine, narcotine, tubocurarine). Indole alkaloids (ergometrine, LSD, vinblastine, vincristine). Quinoline alkaloids (quinine, quinidine). Steroidal Alkaloids (rubiervine). Purine alkaloids (caffeine, theobromine and theophylline). (5 hours)

10. Forms and preparation of medicinal drugs. Phytopharmaceuticals (simple and designed). Extraction methods (maceration, digestion, percolation, re-percolation, evaporation and diaculation; Soxhlet extraction, liquid-liquid extraction, ultrasonic extraction, microwave-assisted extraction, accelerated solvent extraction, supercritical and subcritical fluid extraction). Comparison of conventional and modern extraction methods. (3 hours)

	<p>11. Distillation methods (water distillation (hydrodistillation), water-steam distillation, steam distillation). Simultaneous distillation-extraction. Basics of isolate fractionation (polarity, acid-base properties). Chromatographic methods. Adsorption chromatography. Partition chromatography. Ion exchange chromatography. Affinity chromatography. Exclusion chromatography. Thin layer chromatography. Column chromatography. Gas chromatography. High performance liquid chromatography. (4 hours)</p> <p>12. Systematics of drugs – introduction. Mono- and disaccharides containing drugs. Polysaccharides containing drugs. Fruit (AHA) acids containing drugs. Fats and fatty oils containing drugs. Waxes. Essential oils containing drugs. Acyclic and cyclic monoterpenes containing drugs. (4 hours)</p> <p>13. Carvone containing drugs. Phelandrene containing drugs. Butylphthalide containing drugs. Phenolics containing drugs (thymol and carvacrol). 1,8-Cineole containing drugs. Thujone containing drugs. Bicyclic monoterpenes containing drugs. Balsams. Sesquiterpenes containing drugs. Phenylpropanoids containing drugs. (4 hours)</p> <p>14. Phenolic glycosides containing drugs. Flavonoids containing drugs. Coumarins containing drugs. Iridoids containing drugs. Polysulfides containing drugs. Anthraquinone glycosides containing drugs. Cardiac glycosides containing drugs. (4 hours)</p> <p>15. Saponins containing drugs. Tannins containing drugs. Alkaloids containing drugs. (3 hours)</p> <p>Seminars (45 hours):</p> <ol style="list-style-type: none"> 1. Systematics of drugs – identifying of selected drugs of plant origin. 2. Mechanisms of action of the most common natural medicinal substances in herbal medicines. 3. Pharmaceutical application of herbal medicines. <p>Exercises (30 hours):</p> <ol style="list-style-type: none"> 1. Essential oils. Isolation of lavender essential oil by hydrodistillation using apparatus according to the European Pharmacopoeia (Ph. Eur). 2. Essential oils. Isolation of clove essential oil by water and steam distillation. 3. Isolation of phenylpropane derivative eugenol from clove essential oil. Thin layer chromatography (TLC) of lavender and clove essential oils. Density determination of lavender and clove essential oils. 4. Recording and interpretation of UV/VIS and FT-IR spectra of eugenol and clove essential oil. Evaluation of eugenol and clove essential oil antioxidant activity by DPPH method. 5. Alkaloids. Isolation of caffeine from tea. 6. Characterization of caffeine. Colour reaction. Thin-layer chromatography. Determination of melting point. UV/VIS and FT-IR spectroscopy. 		
Format of instruction	<table border="0"> <tr> <td data-bbox="443 1715 903 1917"> x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work </td> <td data-bbox="903 1715 1457 1917"> <input type="checkbox"/> independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other) </td> </tr> </table>	x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)
x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.		

Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training	
	Experimental work	1.0	Report		(Other)	
	Essay		Seminar essay	3.0	(Other)	
	Tests	1.0	Oral exam		(Other)	
	Written exam	5.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>A student can pass the entire exam by taking and passing three partial exams (tests) during the semester. Test passing score is 60%. Each test constitute 30% of the final exam score. Grades achieved through laboratory exercises will constitute 10% of the final score. Any of the partial exams passed during the semester is valid throughout the academic year.</p> <p>Students who do not pass some of the partial exams or all of them have to take an written exam in the regular examination periods. Exam passing score is 60%. Grades depending on the test score: 60% - 69% - satisfactory, 70% -79% - good, 80% -89% very good, 90% -100% - excellent.</p>					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	D. Kuštrak, Farmakognozija-Fitofarmacija, Golden marketing-Tehnička knjiga, Zagreb, 2005.			1		
	P. M. Dewick, Medicinal Natural Products: A Biosynthetic Approach, John Wiley & Sons, Chichester, 2009			1		
Optional literature (at the time of submission of study programme proposal)	<p>Hrvatska farmakopeja 2007. s komentarima, Hrvatsko farmaceutsko društvo, Zagreb, 2007.</p> <p>V. Grdinić, D. Kremer, Ljekovito bilje i ljekovite droge: farmakoterapijski, botanički i farmaceutski podaci, Hrvatska ljekarnička komora, 2009.</p> <p>S. V. Bhat, B. A. Nagasampagi, M. Sivakumar, Chemistry of Natural Products, Springer-Narosa, Berlin, 2005.</p>					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> - Analysis of student evaluation of teaching work and teaching quality - Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee - External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Organic Chemistry II				
Code	FAR205	Year of study	2.			
Course teacher	Asoc. Prof. Ani Radonić	Credits (ECTS)	5.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>Acquisition of basic knowledge of the chemistry of carbonyl compounds, carboxylic acids and derivatives, recognition of the basic structures of polycyclic and heterocyclic aromatic compounds.</p> <p>This course is the foundation for understanding other courses, such as Pharmaceutical Chemistry I and II.</p>					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Connect the molecular structure of organic compounds with their physical and chemical properties and reactivity.* 2. Explain the reaction mechanisms of nucleophilic addition and nucleophilic substitution at the carbonyl group. 3. Predict the products of basic reactions in organic chemistry and plan the synthesis of less complex organic compounds.* 4. Solve problems regarding carbonyl compounds and carboxylic acid and derivatives. 5. Perform independently laboratory preparations of selected organic compounds from the group of carbonyl and carboxyl compounds according to laboratory procedures. 6. Apply basic laboratory procedures for the synthesis, isolation, and purification of organic compounds and for their characterization and identification. # <p>*LO from set of LO Fundamentals of Organic Chemistry # LO from set of LO Mechanisms of reactions, methods of preparation and identification of organic compounds</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures (2 hours daily):</p> <ol style="list-style-type: none"> 1. Introduction to the course (course content, student responsibilities, conditions for passing the exam). Nucleophilic aromatic substitution: addition-elimination mechanism, elimination-addition mechanism (benzyne mechanism), aryl cation mechanism. 2. Polycyclic aromatic compounds: basic structures and reactivity. Heterocyclic aromatic compounds: basic structures of five- and six-membered heterocycles. Stability and reactivity of heterocyclic aromatic compounds. 3. Nucleophilic addition to the carbonyl group: properties of the carbonyl group. Cyanide as a nucleophile (cyanohydrin formation). Oxygen and sulphur as nucleophiles: addition of alcohols - formation of hemiacetals and acetals, addition of 					

	<p>water – formation of hydrates, addition of thiols - formation of hemithioacetals and thioacetals.</p> <p>4. Hydride as a nucleophile – reduction: reduction by complex metal hydrides. Disproportionation - Cannizzaro reaction.</p> <p>5. Carbon as a nucleophile - organometallic compounds: structure and synthesis of organometallic reagents, Grignard reaction, syntheses using Grignard reagents.</p> <p>6. Nitrogen as a nucleophile: imines, enamines. Nucleophilic addition to carbonyl-related compounds: nucleophilic addition to imines, nucleophilic addition to enamines, nucleophilic addition to nitriles.</p> <p>7. Nucleophilic acyl substitution - carboxylic acid and derivatives: reactivity of carboxylic acids and derivatives, nature of leaving group, reactivity of leaving groups. Acyl halides and anhydrides: acyl halide synthesis, anhydride synthesis.</p> <p>8. Oxygen and sulfur as nucleophiles: substitution with alcohols – esterification (lactonization, transesterification), substitution with water – hydrolysis, substitution with thiols.</p> <p>9. Nitrogen as a nucleophile – amides. Hydride as a nucleophile - reduction.</p> <p>10. Carbon as a nucleophile - organometallic reagents: reactions with esters, reactions with acyl halides, reactions with carboxylic acids.</p> <p>11. Nucleophilic and electrophilic reactivity of carbonyl compounds: keto-enol tautomerism (enolization), enols and enolate anions.</p> <p>12. The aldol reaction, mixed aldol reaction, dehydration of aldol products.</p> <p>13. Ester condensation: Claisen condensation, mixed Claisen condensation, β-ketoester hydrolysis, decarboxylation.</p> <p>14. Alkylation of enolate anions: active methylene compounds. Ambident nucleophiles. Other stabilized carbanions.</p> <p>15. Conjugate addition reactions: electrophilic conjugate addition - conjugated dienes, nucleophilic conjugate addition (Michael reaction) - α,β-unsaturated carbonyl compounds, Diels-Alder reaction.</p> <p>Seminars (1 hour dialy): Solving examples (problem) in organic chemistry.</p> <p>Exercises (6 lab periods):</p> <ol style="list-style-type: none"> 1. Electrophilic aromatic substitution: <i>p</i>-nitroacetanilide synthesis. (1 lab period) 2. Nucleophilic aromatic substitution: phenol synthesis (2 lab periods) 3. Nucleophilic addition to carbonyl group. The Cannizzaro reaction – benzyl alcohol and benzoic acid synthesis (1 lab period) 4. Nucleophilic acyl substitution: acetylsalicylic acid or <i>p</i>-acetaminophen (paracetamol) synthesis, sulfanilamide synthesis (2 lab periods) 					
Format of instruction	x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for	Class attendance		Research		Practical training	
	Experimental work	1.0	Report		(Other)	

<i>each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Essay		Seminar essay		(Other)	
	Tests	1.0	Oral exam		(Other)	
	Written exam	3.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>A student may pass the entire exam by taking and passing two partial exams during the semester, consisting of theoretical questions and seminar assignments. These exams allow the student to solve only a certain part of the exam. The exam is passed with 60%. Each exam accounts for 45% of the final grade. Grades earned in laboratory exercises will constitute 10% of the final grade.</p> <p>Students who have failed one or both of the partial exams must take a written exam during the regular examination periods.</p> <p>Grading depending on the exam results: 60% - 69% - satisfactory, 70% - 79% - good, 80% - 89% - very good, 90% - 100% - excellent.</p>					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	L. G. Wade, ml., <i>Organska kemija</i> , Školska knjiga, Zagreb, 2017.			16		
	I. Jerković, A. Radonić, <i>Praktikum iz organske kemije</i> , Udžbenici Sveučilišta u Splitu, Split, 2009.				Da (web stranica KTF-a)	
Optional literature (at the time of submission of study programme proposal)	<p>J. McMurry, <i>Osnove organske kemije</i>, Zrinski d.d., Čakovec, 2014.</p> <p>J. Clayden, N. Greeves, S. Warren, P. Wothers, <i>Organic Chemistry</i>, Oxford University Press, Oxford, 2005.</p> <p>T. W. Solomons & C. B. Fryhle, <i>Organic Chemistry</i>, John Wiley & Sons, Inc., New York, 2004.</p>					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> - Analysis of student evaluation of teaching work and teaching quality - Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee - External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Physiology				
Code	FAR206	Year of study	2.			
Course teacher	Prof. Zoran Valić	Credits (ECTS)	8.0			
Associate teachers	Prof. Jasna Marinović, Prof. Marko Ljubković, Prof. Darija Baković, Prof. Željko Đujić, Asoc. Prof. Ante Obad, Asoc. Prof. Vladimir Ivančev, Prof. Zoran Đogaš, Prof. Maja Valić, Prof. Renata Pecotić	Type of instruction (number of hours)	L	S	E	F
			45	45	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Objective of the Physiology course is to enable students, applying already acquired knowledge, to understand normal functioning of human organism for successful continuation of their Program.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe the physiological functions of organs and organ systems.* 2. To connect physiological disorders with the pathophysiological basis of the origin of the disease.* 3. Compare similarities and differences in the functioning of individual organic systems.* 4. Identify the basic homeostatic mechanisms of a healthy organism. # 5. Analyze the control mechanisms necessary to maintain homeostasis. # 6. Interpret the results of measured physiological parameters. # <p>*LO form set of LO Physiology # LO form set of LO Physiological mechanisms and parameters</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>LECTURES</p> <p>L-1 Introductory lecture, homeostasis (2) L-2 Red blood cells and blood types (2) L-3 Hemostasis and blood coagulation (2) L-4 Membrane and action potentials; neuromuscular junction (3) L-5 Autonomic nervous system (2) L-6 Control of arterial blood pressure (2) L-7 Control of cardiac output (3) L-8 Blood flow control (2) L-9 The body fluid compartments; edema (2) L-10 General principles of gastrointestinal function (2) L-11 Integration of respiration (3) L-12 Structure and function of the respiratory system (2) L-13 Regulation of respiration (2) L-14 Introduction to endocrinology; pituitary hormones (3) L-15 Hormonal functions of the male and female (3) L-16 Sport physiology (2) L-17 Biophysical principles of excitation (1) L-18 Synapses (1) L-19 Neurotransmitters (1) L-20 General principles of sensory systems; chemical senses (2)</p>					

	L-21 General principles of motor system (1) L-22 Cerebellum (2) SEMINARS S-1 Contraction of skeletal and smooth muscle (3) S-2 Rhythmical excitation of the heart and EKG (3) S-3 Overview of the circulation (3) S-4 Regulation of circulation (3) S-5 Urine formation by the kidneys (3) S-6 Osmolality, renal regulation of ions; acid-base regulation (3) S-7 Secretion; digestion and absorption; liver (3) S-8 Dietary balances; body temperature regulation (2) S-9 Pulmonary circulation (2) S-10 Physical principles of gas exchange (3) S-11 Transport of O ₂ , CO ₂ (2) S-12 Thyroid and adrenocortical hormones (3) S-13 Pancreatic and para thyroid hormones (3) S-14 The special senses (3) S-15 Learning and memory; behavior and motivation (3) S-16 States of brain activity(2) S-17 Cerebral blood flow and cerebrospinal fluid (1) EXERCISES Ex-1 Arterial Blood Pressure and Exercise (3) Ex-2 EKG and Heart Ultrasound (3) Ex-3 Spirometry (3) Ex-4 OGTT (3) Ex-5 Synaptic signalization (3)					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	2.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	6.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The condition for taking the Physiology exam is regular attendance. The Physiology exam is conducted as a written exam. The written exam consists of 100 questions divided into 2 separate tests. The written exam is considered passed if the student achieves 60 points in total, or at least 30 points on each of the individual tests					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	A. C. Guyton i J. E. Hall, Medicinska fiziologija, 14. izdanje, Medicinska naklada, Zagreb, 2022.			20		
	Handouts for provided by teachers					

Optional literature (at the time of submission of study programme proposal)	Exercise materials
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none">- Analysis of student evaluation of teaching work and teaching quality- Analysis of passing on exams- Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee- External evaluation
Other (as the proposer wishes to add)	

NAME OF THE COURSE		Pathophysiology with the Basics of Pathology				
Code	FAR207	Year of study	2.			
Course teacher	Prof. Tina Tičinović Kurir	Credits (ECTS)	7.0			
Associate teachers	Asoc. Prof. Joško Božić Asst. Prof. Marino Vilović Asst. Prof. Anteo Bradarić Asst. Prof. Mladen Krnić Prof. Valdi Pešutić-Pisac Prof. Snježana Tomić Prof. Meri Glavina Durdov	Type of instruction (number of hours)	L	S	E	T
			45	30	30	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The objective of the course is to acquaint the student with the pathophysiological events characteristic of individual functional units, as well as of the entire organism of a sick person. Furthermore, the objective of the course is to encourage the student to see and interpret the etiopathogenetic processes in an integral manner, as well as to acquire theoretical frameworks and practical knowledge and skills about the ways of the body's response to disease. Finally, the objective of the course is to provide the student with basic knowledge about the mechanisms of damage to cells, tissues and organs and to familiarize him with the morphological changes that underlie diseases.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe the pathophysiological principles of the disease.* 2. Describe the main pathophysiological processes at the level of cells and organs.* 3. Analyze the impact of pathophysiological events in one organ on other organs and the organism as a whole.* 4. Explain and discuss the changes that occur during disturbances of the control mechanisms (positive and negative feedback loops) of individual organic systems, as well as the whole organism. 5. Enumerate, describe and explain clinical features associated with certain pathophysiological processes in different pathological conditions. 6. Explain the influence of heredity, environmental factors and risk factors on the etiopathogenesis of various pathological conditions. 7. List groups of pathological processes, describe their etiopathogenetic mechanisms. 8. State the most important morphological features of the disease, connect them with the elements of the clinical picture and be able to apply this knowledge to individual clinical examples. 9. Recognize and describe the macroscopic changes of individual tissues and organs and, based on this, determine the differential diagnosis of possible diseases. <p>*LO from set of LO Pathophysiological principles and processes</p>					
Course content broken down in detail by weekly class schedule (syllabus)	LECTURES: P1. Pathophysiology of the cardiovascular system 1 P2. Pathophysiology of the cardiovascular system 2 P3. Pathophysiology of circulatory collapse					

	<p>P4. Pathophysiology of atherosclerosis and lipid disorders P5. Pathophysiology of arterial hypertension P6. Pathophysiology of the respiratory system P7. Thermoregulation P8. Pathophysiology of anemia P9. Disorders of energy metabolism P10. Pathophysiology of RAAS, NO and SRK P11 Disorders of carbohydrate and protein metabolism P12 Endocrinopathies 1 P13 Endocrinopathies 2 P14 Pathophysiology of renal failure P15 Fluid and electrolyte circulation disorders P16 Disorders of acid-base status P17 Cellular pathology 1 P18 Cellular pathology 2 P19 Inflammation 2 P20 Neoplasms 1 P21 Disorders of the immune system 1</p> <p>SEMINARS: S1 Pathophysiology of the cardiovascular system S2 Problem seminar - cardiovascular system S3 Pathophysiology of the gastrointestinal and hepatobiliary system S4 Pathophysiology of the renal-urinary system S5 Problem seminar - kidney and gastrohepatology S6 Disorders of parathyroid and calcium/phosphorus circulation S7 Pathophysiology of inflammation and infection S8 Blood coagulation disorders S9 Problem seminar - endocrinopathies and metabolism S10 Integration of pathophysiology S11 Inflammation 1 S12 Disorders of the immune system 2 S13 Neoplasms 2</p> <p>EXERCISES: V1 Orthostatic load V2 Load with ECG V3 Chemical etiological factors V4 Clinical exercise – cardiovascular system V5 Clinical exercise – renal insufficiency V6 Problem exercise 1 V7 Clinical exercise - gastrohepatology V8 Problem exercise 2 V9 Clinical exercise – patients with endocrinopathies V10 Problem exercise 3 V11 Integration exercise</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the</i>	Class attendance	0.5	Research		Practical training	

<i>proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Experimental work		Report		(Other)	
	Essay		Seminar essay	1	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	6.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The exam consists of a written test and an oral exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	1. Gamulin S, Kovač Z, Marušić M. Patofiziologija, VIII. izdanje. Medicinska naklada, Zagreb, 2018.			15		
	2. Damjanov I, Seiwert S, Jukić S, Nola M. Patologija. V izdanje. Zagreb: Medicinska naklada; 2018.			10		
Optional literature (at the time of submission of study programme proposal)	1. McCance KL, Huether SE. Pathophysiology - the Biologic Basis for Disease in Adults and Children 8/E, 2018. 2. Z. Kovač, Problemski zadaci iz patofiziologije, 3.izdanje, Medicinska naklada, Zagreb, 2011. 3. Nola M, Damjanov I. i sur. Patologija. Priručnik za pripremu ispita. Zagreb: Medicinska naklada; 2008.					
Quality assurance methods that ensure the acquisition of exit competences	- Analysis of student evaluation of teaching work and teaching quality - Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee - External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Applied Biochemistry				
Code	FAR208	Year of study	2.			
Course teacher	Asoc. Prof. Vedrana Čikeš Čulić	Credits (ECTS)	5.5			
Associate teachers	Prof. Anita Markotić, Asoc. Prof. Mila Radan, Asst. Prof. Nikolina Režić Mužinić, Asst. Prof. Marina Degoricija	Type of instruction (number of hours)	L	S	E	F
			30	15	30	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the course Applied Biochemistry is for students to acquire basic knowledge about the molecular structure of living matter and metabolic processes in the body of a healthy person, as well as familiarization with the basic biochemical processes in specific tissues. The acquired knowledge combines chemical and physiological aspects of human biochemistry and forms the basis for understanding a large number of diseases caused by pathobiochemical processes.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe and explain the structures and reactions of the most important biochemical compounds, including small, large and supramolecular structures found in the cell. 2. Define and explain the principles of biochemical and energetic changes as well as the regulation mechanisms of the metabolism of carbohydrates, lipids, proteins, informational macromolecules and signaling molecules. 3. Integrate metabolic changes at the level of cells, tissues and the whole organism. 4. Develop practical skills for work in a biochemical laboratory (basics of safe work in the laboratory, calculation of basic laboratory parameters and monitoring and interpretation of the results of laboratory measurements). 5. Create a critical attitude about the meaning of biochemistry in modern medical science. 6. Define the principles of basic biochemical techniques of protein analysis and purification. * 7. Make simple biochemical experiments that confirm the presence and observe the properties of biological macromolecules, determine the kinetic parameters of enzymes, and purify individual biological molecules from the mixture.* <p>*LO from set of LO Biochemical techniques and experiments</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>The number of hours per individual topic is indicated in parentheses</p> <p>LECTURES (30 hours)</p> <p>INTRODUCTION TO METABOLISM L1 (2) Metabolism. Basic terms L2 (1) Role of ATP. Metabolic fuels L3 (2) Hormones and hormonal regulation</p> <p>METABOLISM OF CARBOHYDRATES AND FATS L4 (2) Glycolysis and citric acid cycle L5 (2) Respiratory chain and oxidative phosphorylation</p>					

	<p>L6 (2) Glycogenesis and glycogenolysis L7 (2) Gluconeogenesis and the pentose phosphate pathway L8 (2) Oxidation of fatty acids. Ketogenesis L9 (2) Biosynthesis of fatty acids and eicosanoids. Fat transfer and storage L10 (2) Metabolism of cholesterol, acylglycerol and sphingolipids</p> <p>METABOLISM OF AMINO ACIDS AND AMINO ACID DERIVATIVES L11 (2) Breakdown of protein and nitrogen from amino acids. Biosynthesis of non-essential amino acids L12 (2) Metabolism of porphyrins and bile dyes. Conversion of amino acids into specific products L13 (1) Metabolism of purine and pyrimidine nucleotides</p> <p>REGULATION OF METABOLISM L14 (2) Diversity of the endocrine system L15 (2) Integration of metabolism L16 (2) Nutrition, vitamins and minerals</p> <p>SEMINARS (15 hours)</p> <p>S1 (1) Metabolic fuels S2 (1) Regulation of glycolysis and CAC S3 (1) Oxidative stress and thermogenesis S4 (1) Blood glucose regulation S5 (1) Oxidation of fatty acids and ketogenesis S6 (1) Obesity and hypercholesterolemia S7 (2) Integration of carbohydrate and lipid metabolism S8 (2) Metabolism of amino acids and porphyrins S9 (1) Nucleotide metabolism S10 (1) Disorders of hormone synthesis S11 (2) Integration of metabolism S12 (1) Micronutrients: vitamins and minerals</p> <p>PRACTICALS (30 hours)</p> <p>P1 (3) Electrophoresis of serum proteins P2 (3) Osmotic resistance of erythrocytes. Determination of glucose in the blood P3 (3) Determination of HbA1c by ion-exchange chromatography P4 (3) Immunochemical analyzes (ELISA) P5 (3) Determination of lipoproteins P6 (3) Determination of creatinine and pathological components of urine P7 (3) Determination of conjugated and unconjugated bilirubin in serum P8 (3) Hemostasis and fibrinolysis (determination of APTT, fibrinogen and fibrinolysis) P9 (3) Determination of iron and iron binding capacity in serum P10 (3) Final exam from laboratory practicum</p>										
Format of instruction	<table border="0"> <tr> <td><input checked="" type="checkbox"/> lectures</td> <td><input type="checkbox"/> independent assignments</td> </tr> <tr> <td><input checked="" type="checkbox"/> seminars and workshops</td> <td><input type="checkbox"/> multimedia</td> </tr> <tr> <td><input checked="" type="checkbox"/> exercises</td> <td><input checked="" type="checkbox"/> laboratory</td> </tr> <tr> <td><input type="checkbox"/> <i>on line</i> in entirety</td> <td><input type="checkbox"/> work with mentor</td> </tr> <tr> <td><input type="checkbox"/> partial e-learning</td> <td><input checked="" type="checkbox"/> consultations</td> </tr> </table>	<input checked="" type="checkbox"/> lectures	<input type="checkbox"/> independent assignments	<input checked="" type="checkbox"/> seminars and workshops	<input type="checkbox"/> multimedia	<input checked="" type="checkbox"/> exercises	<input checked="" type="checkbox"/> laboratory	<input type="checkbox"/> <i>on line</i> in entirety	<input type="checkbox"/> work with mentor	<input type="checkbox"/> partial e-learning	<input checked="" type="checkbox"/> consultations
<input checked="" type="checkbox"/> lectures	<input type="checkbox"/> independent assignments										
<input checked="" type="checkbox"/> seminars and workshops	<input type="checkbox"/> multimedia										
<input checked="" type="checkbox"/> exercises	<input checked="" type="checkbox"/> laboratory										
<input type="checkbox"/> <i>on line</i> in entirety	<input type="checkbox"/> work with mentor										
<input type="checkbox"/> partial e-learning	<input checked="" type="checkbox"/> consultations										

	<input type="checkbox"/> field work					
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training	0.5
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam	2.0	(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>The exam in Applied Biochemistry is written and oral.</p> <p>The written exam has 50 questions and carries a maximum of 50 points, and passing is achieved with <u>26 points</u>.</p> <p>The practical exam carries a maximum of 5 points, and passing is achieved with <u>2.5 points</u>.</p> <p>Point scale and corresponding grades on the written part of the exam: 28.5 - 34 sufficient 35 – 41 good 42 - 48 very good 49 – 55 excellent</p> <p>The final grade is the mean value of the grade obtained in the written exam and grades achieved in the final oral part of the exam.</p>					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	R. K. Murray, D.A. Bender, K.M. Botham, P.J. Kennelly, V. W. Rodwell, P. A. Weil: Harperova ilustrirana biokemija, 28. izdanje Lange Medical Books / McGraw-Hill, 2009. (Hrvatski prijevod, 2011.)			15		
	Praktikum iz Primijenjene biokemije			Print office Redak		
Optional literature (at the time of submission of study programme proposal)	Emine E. Abali, Susan D. Cline, David S. Franklin, Susan M. Viselli. Lippincott Illustrated Reviews: Biochemistry. 8th ed. Philadelphia, PA: Wolters Kluwer, 2021.					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Immunology and Vaccines				
Code	FAR209	Year of study	2			
Course teacher	Asst. Prof. Jasminka Omerovic	Credits (ECTS)	4.5			
Associate teachers	Prof. Janoš Terzić Prof. Ivana Marinović Terzić Prof. Ivana Novak Nakir Asst. Prof. Jelena Korać Prlić	Type of instruction (number of hours)	L	S	E	F
			30	15	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The goals of classes at the Department of Immunology and Medical Genetics are to provide students with knowledge and understanding in the field of Immunology.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Recognize the components of the immune system, describe their biological properties and the normal development of innate and acquired immunity, and identify the outcomes of impaired development and/or deficiency of immune components.* 2. Compare the mechanisms of activation of innate and acquired immunity, explain how the outcomes of innate immunity activate acquired immunity, and describe the mechanisms and outcomes of the regulation of immune reactions.* 3. Recognize the key mechanisms that lead to disruption of the normal function of the immune system (hypersensitivity, autoimmunity, immunodeficiency) and analyze the principles for therapeutic modulation of the immune system.* 4. Describe the mechanisms by which innate and acquired immunity suppress bacterial, fungal and viral infections, as well as the consequences of ineffectiveness of individual actions. # 5. Explain the role and mechanisms by which the immune system participates in the prevention/occurrence of neoplasms and approaches to the treatment of malignant diseases based on the modulation of the immune system. # 6. Explain the role of immune reactions in allogeneic tissue and organ transplantation and the laboratory methods used in tissue typing. # 7. Describe the immune basis of vaccines and biotherapeutics and recognize the advantages and disadvantages of new immunopharmaceuticals. # <p>*LO from set of LO Immune system # LO from set of LO Immune system in the development and therapy of diseases</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures</p> <p>P1 (3 hours) – Basics of immunology. P2 (3 hours) – Innate immunity. P3 (2 hours) – Microbiome. P4 (2 hours) – Mucous membrane immunity. P5 (2 hours) – Cytokines. P6 (2 hours) – Research methods in immunology. P7 (3 hours) – Immunity to tumors. Transplantation. P8 (2 hours) – Modulation of the immune response. P9 (2 hours) – Chronic inflammation and tumors. P10 (2 hours) – Congenital and acquired immunodeficiencies. P11 (3 hours) – Modulation of the immune response by vaccines. P12 (2 hours) – Types of vaccines and their application.</p>					

	<p>Seminars</p> <p>S1 (3 hours) – Presentation of antigens. MHC. S2 (3 hours) – Antigen recognition. Acquired immunity. S3 (3 hours) – Cellular immunity. S4 (3 hours) – Executive mechanisms of cellular immunity. S5 (2 hours) – Humoral immunity. Antibodies. S6 (2 hours) – Executive mechanisms of humoral immunity. Complement. S7 (3 hours) – Immunological tolerance. Autoimmunity. S8 (2 hours) - Hypersensitivity.</p> <p>Exercises</p> <p>V1 (3 hours) – Determination of the number of leukocytes in the blood. V2 (3 hours) – Differential blood count. Determination of blood group. V3 (2 hours) – Production and characterization of antibodies. Immunoprecipitation. V4 (3 hours) – ELISA. V5 (2 hours) – Flow cytometry.</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.5	Research		Practical training	0.5
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1.0	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	During the classes, active participation in seminars is assessed, but the majority of the assessment consists of points earned in the written exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Basic Immunology, Functions and Disorders of the Immune system. Abbas A.K, Lichtman A. H., Pillai S.P. 6 th edition, Elsevier, 2020.					
	2. Epidemiology and Prevention of Vaccine-Preventable Diseases. The Pink Book: Course Textbook. 14th edition Atlanta: CDC; 2021.				Freely available online	
Lecture materials				Available via the Moodle / Merlin platform		

	Practical materials		Available via the Moodle / Merlin platform
Optional literature (at the time of submission of study programme proposal)	Cellular and molecular immunology, Abbas, Lichtman, Pillai, 2021. 10th ed.		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Medical Genetics				
Code	FAR301	Year of study	3.			
Course teacher	Prof. Ivana Novak Nakir	Credits (ECTS)	3.0			
Associate teachers	Prof. Janoš Terzić Prof. Ivana Marinović Terzić Asst. Prof. Jelena Korać Prlić Asst. Prof. Jasminka Omerović	Type of instruction (number of hours)	L	S	E	F
			14	24	12	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>The objectives of the course are:</p> <ul style="list-style-type: none"> - Describe the structure of the human genome, protein coding genes. Define the basic ways of inheritance and give their examples (with the correct use of terminology). Explain autosomal and sex-linked inheritance. Determine the types of inheritance according to the genealogical tree. Integrate knowledge when understanding multigenic traits. - Understanding of the genetic and environmental background of certain monogenic diseases, multigenic diseases and chromosomal disorders. Give examples. - Understand the genetics of cancer. - Knowledge of prenatal genetic testing methods. Ethical and legal issues in medical genetics. - Knowledge of basic genetic techniques, their use and application in understanding simple genetic discoveries. Comparison and use of different databases. - Evaluate the importance of modern discoveries of gene therapy, genetically modified organisms and stem cells. Understanding of pharmacogenetics with examples. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Define basic genetic concepts.* 2. Explain the laws of inheritance.* 3. Describe chromosomal aberrations, the mechanism of their occurrence and consequences.* 4. Microscopically analyze the morphology of chromosomes and phases of the cell cycle.* 5. Describe examples of monogenetic diseases. 6. Describe examples of multigenic and complex diseases and understand the genetics of cancer. 7. Explain the principles of gene therapy and genome editing. 8. Describe diagnostic methods in medical genetics. <p>*LO from set of LO Fundamentals of Genetics.</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Lectures</u></p> <p>P1 (2 hours) Introduction to medical genetics. Genome. Mutations and aberrations. P2 (2 hours) Inheritance patterns. P3 (2 hours) Gene therapy – principles, vectors, ZNF, CRISP/Cas9 P4 (2 hours) Gene therapy of monogenetic diseases and tumors. P5 (2 hours) Stem cells. Artificial insemination. P6 (2 hours) Diagnostics of genetic diseases - DNA analysis and methods in medical genetics. P7 (2 hours) Genetic counseling. Screening. Ethical and legal issues.</p> <p><u>Seminars</u></p>					

	<p>S1 (3 hours) Developmental genetics. Are we determined by genes or upbringing? S2 (3 hours) Pharmacogenetics. S3 (3 hours) Hemoglobinopathies. Biochemical genetics. S4 (3 hours) Monogenic diseases. S5 (3 hours) Cancer genetics. S6 (3 hours) Congenital anomalies. Chromosomal disorders. S7 (3 hours) Polygenic and multifactorial diseases. Genetic factors in common diseases. S8 (3 hours) Prenatal testing.</p> <p>Exercises V1 (2 hours) Bioinformatics I – PubMed, OMIM, WoS V2 (2 hours) Bioinformatics II – aligning and making primers for PCR and RT-PCR V3 (2 hours) Bioinformatics III – proteins V4 (2 hours) Analysis of scientific work. V5 (2 hours) Inheritance patterns. Calculating risk for genetic diseases. V6 (2 hours) Examples of clinical cases, karyotype - analysis</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input checked="" type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1.0	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	During classes, active participation in seminars is assessed. Majority of the final grade is achieved in the written exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Emery's Elements of Medical Genetics and Genomics, Turnpenny, Ellard and Cleaver, 16th Edition, 2020, Elsevier.			15		
	New Clinical Genetics, Read and Donnai, 4th edition, 2020. Scion Publishing.					
	Materials from lectures, seminars and practicals prepared by lecturers				Available through Moodle/Merlin	

Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Pharmaceutical Chemistry I				
Code	FAR302	Year of study	3			
Course teacher	Asst. Prof. Dario Leskur	Credits (ECTS)	8.5			
Associate teachers	Asst. Prof. Ana Šešelja Perišin Ivanka Maleš, MPharm	Type of instruction (number of hours)	L	S	E	F
			45	15	60	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to acquire knowledge about the medicines' chemical structures, physicochemical properties, the relationship between chemical structure and mechanism of action, and methods of development of the medicines from each therapeutical class. Acquiring knowledge from this course is necessary to understand subsequent courses as well as for future work in the profession and professional development.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe process of the new drug development. 2. Propose a change in the drug structure that will lead to optimization of pharmacodynamic and/or pharmacokinetic properties. * 3. Analyze the chemical structure of drugs with an effect on the autonomic and central nervous system and the digestive system and classify them into the appropriate therapeutic class.* 4. Recognize the physicochemical and stereochemical properties of drugs with an effect on the autonomic and central nervous system and the digestive system.* 5. Describe and predict the mechanism of action, use and method of administration of drugs with an effect on the autonomic and central nervous system and the digestive system based on their chemical structure.* 6. Assess the influence of the structure of drugs with effects on the autonomic and central nervous system and the digestive system on the absorption, distribution, metabolism and elimination of drugs.* 7. Carry out the chemical synthesis of drugs with an effect on the autonomic and central nervous system and the digestive system and determine the utilization of synthesis reactions. 8. Apply the principles of organic chemistry in the synthesis of selected drugs with effects on the autonomic and central nervous system and the digestive system and explain the mechanism of chemical reactions. <p>* LO from set of LO Pharmaceutical Chemistry</p>					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures: <ol style="list-style-type: none"> 1. Introduction 2. Drug targets 3. The new drug discovery 4. Lead compound 5. Optimization of the target interactions 6. Optimization of the drug access 7. Drugs that directly modulate gastric acidity 8. Laxatives, antidiarrheals, adsorbents, antiflatulants 9. Antiulcer drugs 10. Anesthetics: general and local 11. Analgesics 					

	<p>12. Antitussives, expectorants 13. Hypnotics, sedatives and anxiolytics 14. Neuroleptics 15. Antiepileptics 16. Antidepressants 17. Psychostimulants, analeptics, anorexics 18. Hallucinogens 19. Antiparkinsonian drugs 20. Medicines that affect the autonomic nervous system 21. Parasympathomimetics 22. Neurotropic, neuromusclotropic and musculotropic spasmolytics 23. Ganglioblockers, muscle relaxants, myotonolytics 24. Sympathomimetics and sympatholytics 25. Medicines that act through the serotonin system 26. Antiemetics 27. Plasma expanders</p> <p>Seminars and workshops: 1. Principles of organic synthesis 2. Synthesis: selected analgesics 3. Syntheses: selected antiepileptics 4. Syntheses: selected psychopharmaceuticals 5. Synthesis: miscellaneous medicines 6. Synthesis: selected drugs with effects on the digestive system 7. Development of drugs for the treatment of autoimmune diseases 8. Development of miscellaneous medicines</p> <p>Exercises: 1. Stereochemistry 2. Acetylsalicylic acid 3. Phenytoin 4. Bismuth subgallate 5. Benzocaine 6. Sodium chloride, calcium carbonate and hydrochlorothiazide 7. Application of computer assisted techniques in drug design I 8. Application of computer assisted techniques in drug design II 9. Application of computer assisted techniques in drug design III</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of</i>	Class attendance	0.5	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0.5	(Other)	

<i>ECTS credits is equal to the ECTS value of the course)</i>	Tests	0.5	Oral exam	3.5	(Other)	
	Written exam	3.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Regular lecture attendance is a requirement for the entry to the final exam. The final exam consists of written and oral test, each contributing 50% to the final grade. Written test consists of 10 questions. It is necessary to acquire 60% of the points on the written examination to be admitted to the oral examination.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Graham L. Patrick. An introduction to medicinal chemistry. 5th ed., Oxford University Press, Oxford, UK					
	Mladen Mintas, Silvana Raić-Malić. Medicinska kemija. 2009. Medicinska naklada, Zagreb, Hrvatska					
	Hand-outs from the lectures				online	
Optional literature (at the time of submission of study programme proposal)	<p>1. John M Beale, John H. Block. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 12th ed., Lippincott Williams & Wilkins, Philadelphia, USA</p> <p>2. Victoria F. Roche, S. William Zito, Thomas Lemke, David A. Williams. Foye's Principles of Medicinal Chemistry, 8th ed., Wolters Kluwer Health, Philadelphia, USA</p>					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Instrumental Methods of Analysis in Pharmacy				
Code	FAR303	Year of study	3			
Course teacher	Asoc. Prof. Lea Kukoč Modun	Credits (ECTS)	6.0			
Associate teachers	Asst. Prof. Franko Burčul Maja Biočić, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	The aim of this course is to introduce students to the theoretical principles, practical work and the use of instrumental techniques and procedures relating to the process analysis. The choice of method will depend on the knowledge of the basic principles of individual method or group of methods and the understanding of their advantages and limitations. After completion of a process of learning the learner is able for independent work in instrumental analytical laboratory.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. To acquire theoretical knowledge related to methods of instrumental analysis (spectrometry, electroanalytical, thermal methods, instrumental methods of separation) and principles of operation of instruments 2. Explain the connection between the basic knowledge of analytical chemistry and its application in instrumental analysis 3. Choose an appropriate analytical technique/method for qualitative and quantitative analysis of a pharmaceutical sample.* 4. Carry out the separation method of analysis.* 5. Carry out the spectrometric method of analysis.* 6. Carry out the electroanalytical method of analysis.* 7. Interpret the obtained analytical data.* <p>*LO from set of LO Analytical techniques in pharmacy</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures:</p> <p>P 1,2: Introduction to instrumental techniques and their application in continuous analysis.</p> <p>P 3,4: Kinetic methods of analysis. Continuous flow analysis with aerial segmentation. In-flow analysis by injection.</p> <p>Q 5,6: Planning and optimizing the experiment. Optimizing analytical control of technological processes.</p> <p>P 7,8: Introduction to spectroscopy. Atomic absorption spectrometry. Flame emission spectrometry. Fluorescence spectrometry.</p> <p>Q 9,10: Analysis of molecules and compounds. Absorption spectrometry of ultraviolet and visible radiation.</p> <p>P 11,12: Infrared absorption spectrometry. Raman spectrometry. Mass spectrometry. Nuclear magnetic resonance.</p> <p>P 13,14: Chromatography. Liquid chromatography.</p> <p>P 15,16: Gas chromatography. Columns and detectors in gas chromatography.</p> <p>P 17,18: Surface and structural analysis. Photoelectron spectrometry. Spectrometry of Auger electrons. Microanalysis with electronic sampling. X-ray diffraction analysis. Scanning electron microscope.</p>					

	<p>P 19,20: Electroanalytical methods. Potentiometry. P 21,22: Types of indicator electrodes. Potentiometric measuring devices. P 23,24: Electrogravimetry. P 25,26: Coulometry, amperometry. P 27,28: Voltammetry. P 29, 30: Thermal analysis. Thermogravimetry. Differential thermal analysis.</p> <p>Seminar: S 1: Introduction, memento. SI system of units. (numerical examples). S 2: Kinetic methods of analysis. (numerical examples). S 3: Flow analysis by injection, construction of the measuring system. S 4: Atomic absorption spectroscopy. S 5: Spectrometry I (numerical examples). S 6: Spectrometry II (numerical examples). S7: Chromatography I (numerical examples). S 8: Chromatography II (numerical examples). S 9: Chromatographic methods recommended in the Pharmacopoeia. S 10: Potentiometry I (numerical examples). S 11: Potentiometry II (numerical examples). S 12: Electrogravimetry (numerical examples). S 13: Coulometry. (numerical examples). S 14: Voltammetry (numerical examples). S 15: Thermogravimetry (numerical examples).</p> <p>Experimental part of the lesson: 1. Kinetic methods of analysis 2. Analysis in flow by injection 3. Spectrophotometry in the ultraviolet and visible range 4. Atomic absorption spectroscopy 5. Potentiometry 6. Chromatography</p>					
Format of instruction	x lectures x seminars and workshops x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		x independent assignments x multimedia x laboratory <input type="checkbox"/> work with mentor x team based learning			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training	
	Experimental work	0.3	Report		Test of numerical examples	1.8
	Essay		Seminar essay		Test of theoretical part	3.0
	Tests		Oral exam	0.9	(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	Scoring at the exam consists of three basic parts: scoring the experimental part (minimum score 2 , maximum score 4), test of numerical example (minimum score: 18; maximum score: 30) and test of theoretical part (minimum score: 39; maximum score: 65).					

	<p>Students who had attended lectures and seminar in 70 % can take the exam through partial tests: 2 tests of numerical examples (minimum score: 9; maximum score: 15) and 2 tests of theoretical part (minimum score: 19,5; maximum score: 32,5).</p> <p>The rating is formed in accordance with the score ranges: sufficient (60 - 70 points) , good (71-80 points) , very good (81-90 points) , excellent (≥ 91 points).</p>		
Required literature (available in the library and via other media)	<p style="text-align: center;">Title</p>	<p style="text-align: center;">Number of copies in the library</p>	<p style="text-align: center;">Availability via other media</p>
	Nj. Radić i L. Kukoč Modun, Uvod u analitičku kemiju, Školska knjiga, Zagreb, 2016.	30	
	D. A. Skoog, D. M. West, F. J. Holler, Osnove analitičke kemije, šesto izdanje (englesko), prvo izdanje (hrvatsko), Školska knjiga, Zagreb, 1999.	40	
	M. Kaštelan-Macan, Kemijska analiza u sustavu kvalitete, Školska knjiga, Zagreb 2003.	5	
	I. S. Krull, Analytical Chemistry, Intech, Rijeka, 2012.		Yes: DOI: 10.5772/3086
Optional literature (at the time of submission of study programme proposal)	<ol style="list-style-type: none"> 1. R. Kellner, J. M. Mermet, M. Otto, M. Valcarcel and H. M. Widmer, Analytical Chemistry (A Modern Approach to Analytical Science, Second Edition) Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2004. 2. D. A. Skoog, D. M. West, F. J. Holler and S. R. Crouch, Fundamentals of Analytical Chemistry, Eighth Edition, Thompson Brooks/Cole, Belmont, USA, 2004. 3. G. D. Christian, Analytical Chemistry, Sixth Edition, John Wiley & Sons, Inc., Hoboken, 2004. 4. D. Harvey, Modern Analytical Chemistry, McGraw-Hill Higher Education, New York, London, 2000. 5. D. C. Harris, Quantitative Chemical Analysis, 8th Edition, W. H. Freeman and Company, New York, 2010. 6. F. W. Fifield and D. Kealey, Principles and Practice of Analytical Chemistry, Blackwell Science Ltd, Malden MA, London, 2000. 7. M. Kaštelan-Macan, Enciklopedijski rječnik analitičkog nazivlja, FKIT, Mentor, Zagreb 2014. 8. I. Piljac, Elektroanalitičke metode - teorijske osnove, mjerne naprave i primjena, RMC, Zagreb, 1995. 9. I. Piljac, Senzori fizikalnih veličina i analitičke metode, MediaPrint Tiskara Hrastić, Zagreb, 2010. 10. Analitika okoliša (ur. M. Kaštelan Macan, M. Petrović), HINUS i FKIT, Zagreb 2013. 11. European Pharmacopoeia 7th edition, European Directorate for the Quality of Medicines & HealthCare, Council of Europe, Stasbourg, 2010. 12. Hrvatska farmakopeja 2007, Hrvatsko farmaceutsko društvo, Zagreb, 2007. 		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Pharmaceuticals				
Code	FAR304	Year of study	3.			
Course teacher	Asst. Prof. Ana Šešelja Perišin	Credits (ECTS)	5.5			
Associate teachers	Lovre Zekan, PhD, Ana Petrić, lecturer	Type of instruction (number of hours)	L	S	E	F
			30	30	15	0
Status of the course	Mandatory	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to acquire knowledge about the basic physical, chemical and biological principles that are applied in the development, production and characterization of pharmaceutical forms. This includes acquiring knowledge and understanding the connection between the physical and chemical properties of the active substance, the pharmaceutical dosage form and the technological procedures used in the production of pharmaceutical dosage forms, including ways of adjusting the properties of the pharmaceutical preparation with the aim of influencing the increase in stability, effectiveness and route of administration.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain the physicochemical principles of development of pharmaceutical dosage forms.* 2. Explain the procedures for physicochemical characterization of the active substance and pharmaceutical dosage forms in development and production.* 3. Assess the quality and stability of the pharmaceutical dosage form of the drug.* 4. To identify a suitable technological process for the manufacturing pharmaceutical dosage form.* 5. Apply calculations in the field of pharmaceuticals.* 6. Analyze and interpret experimental data to characterize the pharmaceutical dosage form of the drug.* <p>* LO from set of LO Pharmaceuticals</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (30 hours):</u> <ol style="list-style-type: none"> 1. Introduction to pharmaceuticals (2h) 2. Properties, size and density of solids (2h) 3. Powders (I) - porosity, flowability, mixing and compressibility of powders (2h) 4. Powders (II) – rheology, fluidization and comminution (2h) 5. Solids - hygroscopicity, humidity and polymorphism (2h) 6. Drying procedures in the production of pharmaceutical dosage forms (2h) 7. (In)stability of liquid pharmaceutical dosage forms (2h) 8. Features of the process of dissolving solid substances in pharmaceutical forms (2h) 9. Dispersions - stability and separation methods (2h) 10. Colloids - properties, stability and examples of colloidal therapeutic systems (3h) 11. Rheology and thixotropy (2h) 12. Methods, kinetics and mechanisms in the process of drug release in vitro (2h) 13. Processes at the phase boundary - adsorption and adsorption isotherms (2h) 14. Polymers and macromolecules in pharmaceutical preparations (3h) 					

	<p><u>Seminars (30 hours):</u></p> <ol style="list-style-type: none"> 1. Basics and application of mathematical calculations in pharmaceuticals (4h) 2. Techniques in determining the size of particles (2h) 3. Humidity and drying (2h) 4. Diffusion and dissolution (2h) 5. Adsorption (2h) 6. Realistic rheological systems and problems in pharmaceuticals (3h) 7. Chemical instability in solutions (2h) 8. Degradation kinetics and methods of testing the stability of pharmaceutical dosage forms (accelerated aging test and shelf life determination of pharmaceutical dosage form) (4h) 9. Mechanisms and kinetics of <i>in vitro</i> drug release (3h) 10. Use of water-soluble polymers in pharmaceutical dosage forms (3h) 11. Use of water-insoluble polymers and polymer membranes in pharmaceutical dosage forms (3h) <p><u>Exercises (15 hours)</u></p> <ol style="list-style-type: none"> 1. Determination of particle size (3h) 2. Determination of rheogram (3h) 3. Testing the chemical instability of the active substance in solutions (3) 4. Determination of the distribution coefficient of the active substance in the solvent system (3h) 5. <i>In vitro</i> dissolution and drug release testing (3h) 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1.0	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	3.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Regular attendance of classes is a prerequisite for taking the Pharmaceutics exam. The exam consists of a written exam with multiple-choice questions. To pass the exam, it is necessary to solve at least 60% of the exam correctly.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	I. Jalšenjak, V. Jalšenjak, J. Filipović-Grčić, Farmaceutika, Školska knjiga, Zagreb 1998..					
	Hand-outs from the lectures					online

Optional literature (at the time of submission of study programme proposal)	Alexander T. Florence, David Attwood. 6 th edition: Physicochemical Principles of Pharmacy In Manufacture, Formulation and Clinical Use, Pharmaceutical Press, UK, London, 2015.
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation
Other (as the proposer wishes to add)	

NAME OF THE COURSE		Operations in Pharmaceutical Technology				
Code	FAR305	Year of study	3			
Course teacher	Prof. Nenad Kuzmanić	Credits (ECTS)	5,0			
Associate teachers	Asoc. Prof. Marija Ćosić Antonija Čelan, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	The purpose of this course is to acquaint the students with a systematic approach to the solution of problems relate the inputs and outputs of manufacturing systems. Gaining knowledge about the principles of momentum, heat and mass transfer essential for a fuller understanding of the pharmaceutical process engineering. Students are also acquainted with basic unit operations in the pharmaceutical technology and with the working principles of the most used devices.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Connect the basic principles of mechanical operations and operations in which energy and matter are transferred with the final results of the operations. 2. Explain the legalities that accompany the development of a certain operation. 3. Explain the influence of process parameters on the implementation of a particular operation, with regard to the set goals of the operation, suggest adequate devices. 4. Anticipate problems that may arise when performing unit operations of pharmaceutical technology and propose a possible solution. 					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures and Seminars:</u> <ol style="list-style-type: none"> 1. Introduction to pharmaceutical process technology. Process classification and process variables. 2. Introduction to physical transport phenomena. Rate of transport processes. Molecular and convective transport mechanisms. 3. Fluid characteristics. Flow phenomena. 4. Flow around obstacles. Rate of sedimentation. Gravity sedimentation process. Equipment for gravity sedimentation. 5. Centrifugal sedimentation and equipment for its implementation. 6. Flow through beds of particles. Elementary principles of fluidization. Filtration and its application in pharmaceutical technology. 7. Contacting operations. Agitation and mixing of liquids, solid-liquid mixing (solid suspension), mixing of solids. Mixing equipment in the pharmaceutical technology. 8. Size reduction operation and equipment for size reduction in the pharmaceutical engineering. Granulometric analysis. 9. Fundamental principles of heat transfer. 10. Heat -exchange equipment in the pharmaceutical technology: Heat exchangers. Vaporizers. 11. Fundamental principles of mass transfer. Stationary diffusion. Mass transfer with forced convection. Interphase mass transfer. 12. Heat and mass transfer operations in pharmaceutical technology. Principles of drying. Drying equipment. 13. Distillation. Distillation equipment. 					

	<p>14. Theory of crystallization. Crystallization equipment. 15. Extraction. Extraction equipment.</p> <p><u>Laboratory exercises:</u></p> <p>1. Determination of fluid flow type and the critical Reynolds number. 2. Flow through beds of particles: Fluidization - determination of fluidized bed characteristics. 3. Filtration - determination of filtration rate. 4. Mixing of liquids. Mixing in the solid-liquid systems (suspension of settling and floating solids). 5. Milling - determination of degree of reduction. 6. Drying rate determination. 7. Heat exchanger - determination of partial and overall heat transfer coefficient. 8. Batch cooling crystallization – determination of kinetic of nucleation and crystal growth.</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.5	Research		Practical training	
	Experimental work	0.5	Report		Exercises tests study	0.5
	Essay		Seminar essay		Report from the exercises	0.5
	Tests		Oral exam		(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>During the semester student may pass the complete exam by taking two theoretical partial tests. Tests are consisted of questions from lectures and seminars. Test passing score is 60%. After passing both tests, the overall grade for theoretical part is determined by the following criteria: 60 - 69% - satisfactory, 70 - 79% - good, 80 – 89% - very good, 90 - 100% - excellent.</p> <p>The final grade is calculated form the overall grade of theoretical part and the grade of laboratory exercises. Theoretical part constitutes 75% of grade while laboratory exercises by 25 %. Students who do not pass the partial tests have to take an exam in the regular examination periods. Final grade is determined by previously notated criteria.</p>					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	A.J. Hickey, D. Ganderton, Pharmaceutical Process Engineering, Dekker, Inc., 2nd ed., New York, 2009.			1	Yes	
	Hraste, Mehaničko procesno inženjerstvo, 2. izdanje, HINUS, Zagreb, 2003.			12	Yes	
	W. L. McCabe, J. C. Smith, P. Harriott, Unit Operations of Chemical Engineering, 7th ed., McGraw-Hill, New York, 2005.			2	Yes	

	C. J. Geankoplis, Transport Processes and Separation Process Principles (Includes Unit Operations), fourth ed., Pearson Education, Inc., New Jersey, 2007.	1	Yes
Optional literature (at the time of submission of study programme proposal)	M. Levin, Pharmaceutical Process Scale-Up, Taylor and Francis, 2nd ed., London, 2007. R. M. Felder, R. W. Rousseau, Elementary Principles of Chemical Processes, 3rd ed., John Wiley & Sons, Inc., New York, 2005.		
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Analytics of Medicines				
Code	FAR306	Year of study	3			
Course teacher	Asst. Prof. Doris Rušić	Credits (ECTS)	10.0			
Associate teachers	Asst. Prof. Dario Leskur, Lovre Zekan, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			60	30	45	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>1 Acquisition of knowledge in the field of regulatory science related to the quality of medicinal products</p> <p>2 Understanding of pharmaceutical quality maintenance by manufacturers, pharmacies and the competent authority</p> <p>3 Application of pharmacopoeial monographs in medicinal products control and testing</p> <p>4 Acquisition of knowledge related to pharmaceutical quality in the developmental stages of the medicinal product</p> <p>5 Analysis and preparation of registration documentation related to pharmaceutical quality of the medicinal product</p>					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<p>1 Describe and use pharmacopoeial monographs for the analysis of active substances and excipients.*</p> <p>2 Compare the possibilities of different analytical techniques and choose the appropriate one for solving specific problems in drug analysis.*</p> <p>3 Carry out the validation of the analytical method according to the appropriate guidelines.*</p> <p>4 Define sources and types of contamination in medicinal products and choose methods for their analysis in accordance with relevant ICH guidelines and European directives.*</p> <p>5. Apply analytical methods for identification, testing purity and determining the content of active substances.*</p> <p>6. Calculate the content of pollution and the percentage of declared content in active substances and pharmaceutical dosage forms.*</p> <p>7. Describe analytical tests of polymorphs, hydrates, enantiomers and biological drugs from the aspect of bioavailability, stability of the pharmaceutical product and unwanted effects.*</p> <p>*LO from set of LO Analytics of medicines</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Lectures</u></p> <p>1 Regulatory science: legislation, guidelines and procedures in the EU (2 h)</p> <p>2 Procedure for International Harmonization of Technical Requirements for Medicinal Products, ICH guidelines (2 h)</p> <p>3 European Pharmacopoeia and its role, General Monographs, European Directorate for the quality of medicines and health care (2 h)</p> <p>4 Pharmacopoeial nomenclature for substances for pharmaceutical use and standardized expressions for pharmaceutical forms, routes of administration and containers and closures (2 h)</p> <p>5 Validation of analytical methods (2 h)</p> <p>6 Physical and chemical properties of drug molecules (2 h)</p>					

- 7 Methods of titrimetric and chemical analysis (2 h)
- 8 UV and Vis spectroscopy (2 h)
- 9 Infrared spectrophotometry (2 h)
- 10 Atomic spectrophotometry (2 h)
- 11 NMR spectroscopy (2 h)
- 12 Molecular emission spectroscopy (2 h)
- 13 Mass spectrometry (2 h)
- 14 Chromatographic methods (2 h)
- 15 Gas chromatography (2 h)
- 16 High performance liquid chromatography (2 h)
- 17 Thin-layer chromatography (2 h)
- 18 Capillary electrophoresis (2 h)
- 19 Analysis of biological drugs (2 h)
- 20 Thermoanalytical methods in drug analysis (2 h)
- 21 Analytical methods in polymorph research (2 h)
- 22 Extraction methods in pharmaceutical analysis (2 h)
- 23 Sterility test and pyrogen test (2 h)
- 24 Preparation of the 3rd module of the common technical document (CTD) documentation (3 h)
- 25 Development of a generic drug (3 h)
- 26 Testing the release of active substances from pharmaceutical forms (2 h)
- 27 Good manufacturing practice (2 h)
- 28 Good laboratory practice (2 h)
- 29 Containers for pharmaceutical use and materials for containers (2 h)

Seminars

- 1 ICH Q1 Stability (2 h)
- 2 ICH Q2 Analytical Validation (2 h)
- 3 ICH Q3 Impurities(2 h)
- 4 ICH Q5 Quality of Biotechnological Products (2 h)
- 5 ICH Q8 Pharmaceutical Development (2 h)
- 6 ICH Q10 Pharmaceutical Quality System(2 h)
- 7 ICH Q11 Development and Manufacture of Drug Substances(2 h)
- 8 ICH Q14 Analytical Procedure Development (2 h)
- 9 ICH M6 Gene Therapy (2 h)
- 10 ICH M7 Mutagenic impurities (2 h)
- 11 ICH M8 Electronic Common Technical Document (eCTD) (2 h)
- 12 ICH M9 Biopharmaceutics Classification System-based Biowaivers (2 h)
- 13 ICH M10 Bioanalytical Method Validation and Study Sample Analysis (2 h)
- 14 ICH M12 Drug Interaction Studies (2 h)
- 15 ICH M13 Bioequivalence for Immediate-Release Solid Oral Dosage Forms(2 h)

Exercises

- 1 Confirmation of the identity of substances, chemical reactions of identification of ions and functional groups (5 h)
- 2 Confirmation of substance identity, UV/vis spectrophotometry, chromatography (5 h)
- 3 Examination of limit values of inorganic impurities (5 h)
- 4 Determination of assay by titrimetric method (5 h)
- 5 Determination of assay by UV-Vis spectrophotometry (5 h)
- 6 Determination of assay of the finished drug by the HPLC method (5 h)

	7 Testing the release of the active substance from the finished medicine, dissolution test (5 h) 8 Validation of the analytical method (5 h) 9 Quality control laboratory (5 h)					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	1.0
	Experimental work		Report		(Other)	
	Essay		Seminar essay	2.0	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	6.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam with 90 multiple choice questions.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Croatian Pharmacopoeia 2007				5	
	ICH guidelines					Online, free of charge
	Rulebook on the procedure and method of granting approval for putting a finished medicine on the market					
	Rulebook on quality control of medicines					
	Rulebook on good laboratory practice					
	Lecture materials					
Optional literature (at the time of submission of study programme proposal)	David Watson. Pharmaceutical Analysis, A Textbook for Pharmacy Students and Pharmaceutical Chemists					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Phytotherapy				
Code	FAR 307	Year of study	3.			
Course teacher	Asst. Prof. Josipa Bukic	Credits (ECTS)	5.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	T
			30	15	15	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ol style="list-style-type: none"> To gain knowledge on rational phytotherapy To gain critical thinking in light of herbal products To gain knowledge of herbal products effectiveness and safety To gain knowledge of herbal products interactions, indications and adverse drug reactions 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> Distinguish between herbal medicines, food supplements and cosmetic products with regard to their purpose, quality control and labeling and advertising opportunities.* Classify natural medicinal preparations into therapeutic groups.* List and interpret the indications and contraindications of a particular medicinal product, as well as side effects and clinically significant drug interactions.* Suggest a dosing regimen and duration of application of the natural medicinal preparation for the presented patient.* To recommend an appropriate natural medicinal preparation taking into account the health condition, age and other therapy of the presented patient.* Independently search and critically evaluate relevant scientific and professional literature in the field of phytotherapy.* <p>* LO from set of LO Phytotherapy</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (30 student hours)</u>		<u>Number of hours:</u>			
	1. Introduction to self medication and herbal drugs legislation		6			
	2. Herbal drugs in CNS disorders		6			
	3. Herbal drugs in gastrointestinal disorders		6			
	4. Herbal drugs in skin disorders		6			
	5. Traditional herbal drugs – indications and adverse drug reactions		6			
	<u>Seminars (15 student hours)</u>		<u>Number of hours:</u>			
	1. Case reports from pharmacy practice		5			
	2. Pharmacovigilance of herbal products		5			
	3. Herbal products use in special patients population		5			
	<u>Exercise (15 student hours)</u>		<u>Number of hours:</u>			
	1. Assessment of quality of herbal drugs research		5			
	2. Herbal EU monographs research		5			
	3. Clinical cases from community pharmacy		5			

Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input checked="" type="checkbox"/> consultations			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance		Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam	2.5	(Other)	
	Written exam	2.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The requirement to access the exam is a regular attendance. The exam is compiled from written and oral exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Katzung BG, Masters S, Trevor AJ, „Basic and clinical pharmacology“, 2. Croatian edition, Zagreb, Medicinska naklada, 2020.					
	Smjernica o dobroj farmakovigilancijskoj praksi				Yes	
	Zakon o medicinskim proizvodima				Yes	
	Zakon o ljekarništvu				Yes	
	Pravilnik o dodacima prehrani				Yes	
Optional literature (at the time of submission of study programme proposal)	1. Zakon o lijekovima 2. Lecture materials					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Pharmacokinetics				
Code	FAR308	Year of study	3.			
Course teacher	Prof. Darko Modun	Credits (ECTS)	6.0			
Associate teachers	Diana Jurić, Ph.D: Ana Marija Milat, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			30	30	15	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ol style="list-style-type: none"> To gain knowledge about pharmacokinetic processes that take place in the patient after administration of the drug, depending on and independent of the method of administration. To acquire the skills necessary for the calculation and analysis of basic pharmacokinetics parameters, and the creation of an individual drug dosing regimen. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> Relate the processes of absorption, distribution, metabolism, and elimination of the drug with the effectiveness and safety of drug use. * Explain the processes of drug absorption regarding the method of administration. * Explain all the important parameters that affect the bioavailability of the drug, and its correct dosage during single and multiple applications. Calculate the pharmacokinetic parameters. * Calculate the single/multiple drug dosing regimen. * Calculate the concentration of the drug in the blood after single/multiple dose application of the drug. * <p>*LO from set of LO Pharmacokinetics</p>					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures (30 student hours)		No. of hours			
	<ol style="list-style-type: none"> Introduction to Pharmacokinetics, routes of drug administration Drug absorption Distribution of the drug Drug metabolism Elimination of the drug One compartment model - i.v. bolus Two compartments model - i.v. bolus Drug administration by iv. infusion Drug administration by oral route Multiple drug doses Nonlinear pharmacokinetics Bioavailability and bioequivalence Properties of Biological therapy 				2 2 2 2 2 2 2 2 4 4 2 2 2	
	Seminars (30 student hours)		No. of hours			
	<ol style="list-style-type: none"> Routes of drug administration Drug absorption Distribution of the drug Drug metabolism Elimination of the drug One compartment model - i.v. bolus 				2 2 2 2 2 2	

	7. Two compartments model - i.v. bolus 2 8. Drug administration by iv. infusion 2 9. Drug administration by oral route 2 10. Advantages and disadvantages of different routes of drug administration 2 11. Multiple drug doses 2 12. Nonlinear pharmacokinetics 2 13. Bioavailability and bioequivalence 2 14. Properties of Biological therapy 2 15. Relationship between pharmacokinetics and pharmacodynamics 2 Exercises (15 student hours) No. of hours 1. Drug administration by i.v. bolus 3 2. Drug administration by iv. infusion 3 3. Drug administration by oral route 3 4. Multiple drug doses 3 5. Bioavailability and bioequivalence 3																														
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work <input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> consultation																														
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.																														
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	<table border="1"> <thead> <tr> <th>Class attendance</th> <td>2.0</td> <th>Research</th> <td></td> <th>Practical training</th> <td></td> </tr> </thead> <tbody> <tr> <td>Experimental work</td> <td></td> <td>Report</td> <td></td> <td>(Other)</td> <td></td> </tr> <tr> <td>Essay</td> <td></td> <td>Seminar essay</td> <td></td> <td>(Other)</td> <td></td> </tr> <tr> <td>Tests</td> <td>1.0</td> <td>Oral exam</td> <td>1.5</td> <td>(Other)</td> <td></td> </tr> <tr> <td>Written exam</td> <td>1.5</td> <td>Project</td> <td></td> <td>(Other)</td> <td></td> </tr> </tbody> </table>	Class attendance	2.0	Research		Practical training		Experimental work		Report		(Other)		Essay		Seminar essay		(Other)		Tests	1.0	Oral exam	1.5	(Other)		Written exam	1.5	Project		(Other)	
Class attendance	2.0	Research		Practical training																											
Experimental work		Report		(Other)																											
Essay		Seminar essay		(Other)																											
Tests	1.0	Oral exam	1.5	(Other)																											
Written exam	1.5	Project		(Other)																											
Grading and evaluating student work in class and at the final exam	Final written and oral exam (50:50 of the final mark). Successful test of Pharmacokinetics is a prerequisite for attending the final exam.																														
Required literature (available in the library and via other media)	<table border="1"> <thead> <tr> <th>Title</th> <th>Number of copies in the library</th> <th>Availability via other media</th> </tr> </thead> <tbody> <tr> <td>Katzung BG. (urednik), "Temeljna i klinička farmakologija", hrvatski prijevod 14. izdanja, Zagreb, Medicinska naklada, 2020.</td> <td>15</td> <td></td> </tr> <tr> <td>Modun D, Bach-Rojecky L, urednici. "Priručnik o virtualnom pokusima iz farmakologije", Split, Medicinski fakultet Sveučilišta u Splitu, 2013.</td> <td>0</td> <td>Yes, available free on the internet</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Title	Number of copies in the library	Availability via other media	Katzung BG. (urednik), "Temeljna i klinička farmakologija", hrvatski prijevod 14. izdanja, Zagreb, Medicinska naklada, 2020.	15		Modun D, Bach-Rojecky L, urednici. "Priručnik o virtualnom pokusima iz farmakologije", Split, Medicinski fakultet Sveučilišta u Splitu, 2013.	0	Yes, available free on the internet																					
Title	Number of copies in the library	Availability via other media																													
Katzung BG. (urednik), "Temeljna i klinička farmakologija", hrvatski prijevod 14. izdanja, Zagreb, Medicinska naklada, 2020.	15																														
Modun D, Bach-Rojecky L, urednici. "Priručnik o virtualnom pokusima iz farmakologije", Split, Medicinski fakultet Sveučilišta u Splitu, 2013.	0	Yes, available free on the internet																													
Optional literature (at the time of submission of study programme proposal)	Kunec Vajić E. "Farmakokinetika". Zagreb, Medicinska naklada, 2004. Tozer TN, Rowland M. "Essentials of pharmacokinetics and pharmacodynamics", Wolters Kluwer, 2nd edition, 2016. Jambhekar SS, Breen PJ. "Basic Pharmacokinetics", Pharmaceutical Press, 2nd edition, 2012.																														

Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none">-Analysis of student evaluation of teaching work and teaching quality-Analysis of passing on exams- Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance-External evaluation.
Other (as the proposer wishes to add)	

NAME OF THE COURSE		Pharmaceutical Chemistry II				
Code	FAR309	Godina studija	3.			
Course teacher	Asst. Prof. Dario Leskur	Credits (ECTS)	7.0			
Associate teachers	Asst. Prof. Ana Šešelja Perišin Ivanka Maleš, MPharm	Type of instruction (number of hours)	L	S	E	F
			45	45	0	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to acquire knowledge about the medicines' chemical structures, physicochemical properties, the relationship between chemical structure and mechanism of action, and methods of development of the medicines from each therapeutical class. Acquiring knowledge from this course is necessary to understand subsequent courses as well as for future work in the profession and professional development.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Analyze the chemical structure of chemotherapeutics agents and drugs with an effect on the cardiovascular, immune and endocrine system and classify them into the appropriate therapeutic class.* 2. Recognize the physicochemical and stereochemical properties of chemotherapeutics agents and drugs with an effect on the cardiovascular, immune and endocrine system.* 3. Describe and predict the mechanism of action, use and method of administration of chemotherapeutics agents and drugs with an effect on the cardiovascular, immune and endocrine system based on their chemical structure.* 4. Assess the influence of the structure of chemotherapeutics agents and drugs with an effect on the cardiovascular, immune and endocrine system on the absorption, distribution, metabolism and elimination of drugs.* 5. Carry out the chemical synthesis of chemotherapeutics agents and drugs with an effect on the cardiovascular, immune and endocrine system and determine the utilization of synthesis reactions. 6. Apply the principles of organic chemistry in the synthesis of selected chemotherapeutics agents and drugs with an effect on the cardiovascular, immune and endocrine system and explain the mechanism of chemical reactions. <p>* LO from set of LO Pharmaceutical Chemistry</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures:</u> <ol style="list-style-type: none"> 1. Antibacterial drugs - historical development, features, production and classification 2. Sulfonamides and sulfones 3. Antibiotics which inhibit bacterial cell wall synthesis: beta-lactams: penicillins 4. Antibiotics which inhibit bacterial cell wall synthesis: beta-lactams: cephalosporins and others 5. Other antibiotics which inhibit bacterial cell wall synthesis 6. Antibiotics that act on plasma membrane structure 7. Antibiotics which impair protein synthesis 8. Antibiotics that act on nucleic acid transcription and replication 9. Anthelmintics and antiprotozoans 					

	<p>10. Antimycotics 11. Antivirals acting against DNA viruses and broad-spectrum antivirals 12. Antivirals acting against RNA viruses 13. Tumors and antitumor drugs: introduction 14. Cytostatics acting directly on nucleic acids 15. Cytostatic agents which act on enzymes related to the synthesis and function of DNA - antimetabolites 16. Cytostatics acting on structural proteins 17. Cytostatics – inhibitors of signaling pathways 18. Cytostatics – hormone-based therapy 19. Cytostatics – miscellaneous enzyme inhibitors 20. Cytostatic agents with different mechanisms of action and photodynamic cancer therapy 21. Male sex hormones 22. Female sex hormones 23. Medicines affecting the cardiovascular system: introduction 24. Antihypertensives 25. Diuretics 26. Antiarrhythmics, 27. Anti-anginal drugs 28. Antihyperlipemic drugs 29. Anticoagulants, fibrinolytics. 30. Cardiotonic glycosides 31. Pancreatic hormones, antidiabetics 32. Glucocorticoids and mineralocorticoids</p> <p><u>Seminars and workshops:</u> 1. Antiseptics and disinfectants 2. Synthesis of selected antibiotics 3. Antituberculous drugs 4. Immunomodulators 5. Synthesis of selected drugs with effects on the cardiovascular system 6. Development of antiviral drugs 7. Development of cytostatics 8. Development of “smart drugs” and targeted therapies for tumor diseases 9. Antibodies in cancer therapy; conjugates of antibodies and cytostatics 10. Oral contraceptives 11. Erythropoietin 12. Iron preparations in the treatment of anemia and iron chelators 13. Calcium preparations and osteoporosis therapy 14. Vitamins, amino acids, peptides 15. Antipsoriatics 16. Antiallergic drugs – inverse H1-receptor agonists</p>	
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.	

Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	0.5	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0.5	(Other)	
	Tests		Oral exam	3.0	(Other)	
	Written exam	3.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Regular lecture attendance is a requirement for the entry to the final exam. The final exam consists of written and oral test, each contributing 50% to the final grade. Written test consists of 10 questions. It is necessary to acquire 60% of the points on the written examination to be admitted to the oral examination.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Graham L. Patrick. An introduction to medicinal chemistry. 5th ed., Oxford University Press, Oxford, UK					
	Mladen Mintas, Silvana Raić-Malić. Medicinska kemija. 2009. Medicinska naklada, Zagreb, Hrvatska					
	Hand-outs from the lectures				online	
Optional literature (at the time of submission of study programme proposal)	1. John M Beale, John H. Block. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry, 12th ed., Lippincott Williams & Wilkins, Philadelphia, USA 2. Victoria F. Roche, S. William Zito, Thomas Lemke, David A. Williams. Foye's Principles of Medicinal Chemistry, 8th ed., Wolters Kluwer Health, Philadelphia, USA					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Pharmacology				
Code	FAR401	Year of study	4.			
Course teacher	Prof. Darko Modun	Credits (ECTS)	10.0			
Associate teachers	Prof. Mladen Boban Prof. Ivana Mudnić Diana Jurić, Ph.D. Ana Marija Milat, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			60	30	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ol style="list-style-type: none"> To gain knowledge about the mechanism of drug action, therapeutic and adverse effects, routes of administration, indications and contraindications of drugs. To acquire the skill of connecting the pharmacology with the pharmaceutical care. To acquire permanent basic knowledge about pharmacology, as a prerequisite for understanding "clinical" courses. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> Describe the principles of absorption, distribution, metabolism, and elimination of drugs. * Identify the targets of the drug's action in the body. * Describe the nature of drug-receptor interactions, and drug interactions with intracellular signaling pathways. * Classify drugs according to the mechanism of action and pharmacotherapeutic groups. * Explain the mechanism of therapeutic action of drugs from the main pharmacotherapeutic groups. * Connect the mechanism of action of the drug with unwanted and adverse effects. * Evaluate the influence of pharmacokinetic parameters on the pharmacological effect of particular drugs. * Identify indications and contraindications for the use of the drug. * <p>*LO from set of LO Pharmacology</p>					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures (60 student hours)		No. of hours			
	1.	Mechanisms of drug action, link with pharmacokinetics	2			
	2.	Adverse effects, interactions, drug safety	2			
	3.	Drug development and generic drugs	2			
	4.	Biological drugs	2			
	5.	Featured antimicrobial drugs	3			
	6.	Drugs for the treatment of tuberculosis and viral infections	2			
	7.	Drugs for treatment of fungal and parasite infections	2			
	8.	Pharmacology of cholinergic receptors	2			
	9.	Pharmacology of adrenergic receptors	2			
	10.	Antipsychotic drugs and antidepressants	2			
	11.	Anxiolytics and opioid analgesics	2			
	12.	Local and general anesthetics	2			
	13.	Drugs for treatment of epilepsy and Parkinson's disease	2			
	14.	Drugs of abuse	2			
	15.	Diuretics	2			

	16. Drugs for treatment of cardiac failure and angina pectoris	2
	17. Antiarrhythmic drugs	2
	18. Antihypertensive drugs	2
	19. Drugs for treatment of dyslipidemias	2
	20. Anticoagulants, fibrinolytics and antiplatelet drugs	2
	21. NSAIDs and DMARDs	2
	22. Immunopharmacology	3
	23. Drugs for the treatment of the digestive system	2
	24. Drugs for treatment of asthma and COPD	2
	25. Antineoplastic drugs	2
	26. Drugs for the treatment of anemias and hematopoietic growth factors	2
	27. Hormones of hypophysis and hypothalamus, drugs for the treatment of osteoporosis and thyroid gland disorders	2
	28. Sex hormones and antagonists	2
	29. Pancreatic hormones and drugs for the treatment of diabetes mellitus	2
	Seminars (30 student hours)	No. of hours
	1. Mechanisms of drug action, link with pharmacokinetics	1
	2. Adverse effects, interactions, drug safety	1
	3. Drug development and generic drugs	1
	4. Biological drugs	1
	5. Featured antimicrobial drugs	1
	6. Drugs for the treatment of tuberculosis and viral infections	1
	7. Drugs for treatment of fungal and parasite infections	1
	8. Pharmacology of cholinergic receptors	1
	9. Pharmacology of adrenergic receptors	1
	10. Antipsychotic drugs and antidepressants	1
	11. Anxiolytics and opioid analgesics	1
	12. Local and general anesthetics	1
	13. Drugs for treatment of epilepsy and Parkinson's disease	1
	14. Drugs of abuse	1
	15. Diuretics	1
	16. Drugs for treatment of cardiac failure and angina pectoris	1
	17. Antiarrhythmic drugs	1
	18. Antihypertensive drugs	1
	19. Drugs for treatment of dyslipidemias	1
	20. Anticoagulants, fibrinolytics and antiplatelet drugs	1
	21. NSAIDs and DMARDs	1
	22. Immunopharmacology	1
	23. Drugs for the treatment of the digestive system	1
	24. Drugs for treatment of asthma and COPD	1
	25. Antineoplastic drugs	1
	26. Drugs for the treatment of anemias and hematopoietic growth factors	1
	27. Hormones of hypophysis and hypothalamus, drugs for the treatment of osteoporosis and thyroid gland disorders	1
	28. Sex hormones and antagonists	1
	29. Pancreatic hormones and drugs for the treatment of diabetes mellitus	1
	30. Problems of self-medication with over-the-counter and herbal drugs	1
	Exercise (30 student hours)	No. of hours
	1. Pharmacodynamics	3

	2. The influence of drugs and ANS on the cardiovascular system and neuromuscular junction 3 3. Psychopharmaceuticals 3 4. Analgesics 3 5. Antiseizure drugs 3 6. Model of the isolated vascular rings of rat aorta 3 7. Model of the isolated heart 3 8. Drug effects on the digestive system 3 9. The Internet as a source of verified information about medicines 3 10. Therapeutic and toxic potential of over-the-counter and herbal drugs 3																														
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work <input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)																														
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.																														
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	<table border="1"> <tr> <td>Class attendance</td> <td>3.0</td> <td>Research</td> <td></td> <td>Practical training</td> <td></td> </tr> <tr> <td>Experimental work</td> <td></td> <td>Report</td> <td></td> <td>(Other)</td> <td></td> </tr> <tr> <td>Essay</td> <td></td> <td>Seminar essay</td> <td></td> <td>(Other)</td> <td></td> </tr> <tr> <td>Tests</td> <td></td> <td>Oral exam</td> <td>4.0</td> <td>(Other)</td> <td></td> </tr> <tr> <td>Written exam</td> <td>3.0</td> <td>Project</td> <td></td> <td>(Other)</td> <td></td> </tr> </table>	Class attendance	3.0	Research		Practical training		Experimental work		Report		(Other)		Essay		Seminar essay		(Other)		Tests		Oral exam	4.0	(Other)		Written exam	3.0	Project		(Other)	
Class attendance	3.0	Research		Practical training																											
Experimental work		Report		(Other)																											
Essay		Seminar essay		(Other)																											
Tests		Oral exam	4.0	(Other)																											
Written exam	3.0	Project		(Other)																											
Grading and evaluating student work in class and at the final exam	The exam is composed of the written test and oral exam that equally contribute to the final mark.																														
Required literature (available in the library and via other media)	<table border="1"> <thead> <tr> <th>Title</th> <th>Number of copies in the library</th> <th>Availability via other media</th> </tr> </thead> <tbody> <tr> <td>Katzung BG. (urednik), "Temeljna i klinička farmakologija", hrvatski prijevod 14. izdanja, Zagreb, Medicinska naklada, 2020.</td> <td>15</td> <td></td> </tr> </tbody> </table>	Title	Number of copies in the library	Availability via other media	Katzung BG. (urednik), "Temeljna i klinička farmakologija", hrvatski prijevod 14. izdanja, Zagreb, Medicinska naklada, 2020.	15																									
Title	Number of copies in the library	Availability via other media																													
Katzung BG. (urednik), "Temeljna i klinička farmakologija", hrvatski prijevod 14. izdanja, Zagreb, Medicinska naklada, 2020.	15																														
Optional literature (at the time of submission of study programme proposal)	Katzung & Trevor's Pharmacology Examination and Board Review, 10th edition. New York: McGraw-Hill Medical; 2013 Bradamante V; Klarica M; Šalković-Petrišić M, urednici. "Farmakološki priručnik". Zagreb, Medicinska naklada, 2008. Modun D, Bach-Rojecky L, urednici. "Priručnik o virtualnom pokusima iz farmakologije", Split, Medicinski fakultet Sveučilišta u Splitu, 2013.																														
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.																														
Other (as the proposer wishes to add)																															

NAME OF THE COURSE		Biochemistry of Medicines				
Code	FAR402	Year of study	4.			
Course teacher	Asst. Prof. Ana Šešelja Perišin	Credits (ECTS)	7.0			
Associate teachers	Asst. Prof. Dario Leskur, Ivanka Maleš, MPharm	Type of instruction (number of hours)	L	S	E	F
			45	15	30	0
Status of the course	Mandatory	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	Aim of the course is to acquire knowledge about the metabolic pathways of xenobiotics and endobiotics, as well as effects that occur because of metabolic changes in their structures. The student will better understand the pharmacological effects, side effects, toxicity and interactions between drugs, which occur because of the specific structure of drugs and enzyme systems in the body that modify them and change their properties.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. To identify the main metabolic pathways and metabolites for certain endogenous substances and drugs.* 2. Differentiate metabolic reactions of the first and second phase.* 3. Describe the main enzyme systems and evaluate their role in biotransformation reactions.* 4. To connect the pharmacodynamic and pharmacokinetic properties of certain drugs and xenobiotics with the specifics of their biotransformation.* 5. Predict the drug's potential for interactions with regard to the metabolic pathway and the potential for enzyme inhibition or induction.* <p>*LO from set of LO Drug metabolism</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Lectures (45 hours)</u></p> <ol style="list-style-type: none"> 1. Introduction to drug metabolism and overview of metabolic reactions of phase I and II (2h) 2. Mechanism of biological oxidation (alcohols, aldehydes, ketones) (2h) 3. Hydroxylation (monooxygenation) (2h) 4. Hydroxylation of aromatic compounds and NIH shift (2h) 5. Reactions of cyclization and oxidation of the N-C system without cleavage of the N-C bond and with cleavage of the N-C bond (N-dealkylation, deamination) (2h) 6. Bickel's triangle - tertiary amines, enzymes MAO, DAO, PAO (2h) 7. S-oxidation and S- and O-dealkylation reactions and aromatization of steroids and cyclohexanes (2h) 8. Mechanism of biological reduction of carbonyl group and reduction of groups with nitrogen. Oxidoreductions of other groups, oxidoreductive dehalogenation and oxidoreductions of steroids (3h) 9. Hydrolytic reactions in the biotransformation of drugs (3h) 10. CYP enzymes: mechanism of activation of molecular oxygen, examples of catalyzed reactions and occurrence of polymorphism (2h) 11. FMO enzymes, molybdenum oxidases, peroxidases: systems for monooxygenation, substrate/ligand binding, molecular oxygen activation mechanism and occurrence of polymorphism (2h) 					

	<p>12. Peroxidases in biological systems and peroxidation of unsaturated fatty acids. (1h)</p> <p>13. Molybdenum hydroxylase. Aldehydoxidase (AO), Xanthine oxidoreductase (XOR). (1h)</p> <p>14. Reactions of biosynthesis and degradation of endobiotics (adrenaline and noradrenaline, folic acid, steroid hormones and purine bases) (2h)</p> <p>15. Methylation reactions in the biotransformation of drugs: reaction mechanism, enzymes and coenzymes (3h)</p> <p>16. Acetylation reactions in the biotransformation of drugs: reaction mechanism, enzymes and coenzymes (2h)</p> <p>17. Conjugation reactions with amino acids in the biotransformation of drugs: reaction mechanism, enzymes and coenzymes (2h)</p> <p>18. Sulfoconjugation reactions in the biotransformation of drugs - mechanism, enzymes, coenzymes (1h)</p> <p>19. Glucoconjugation reactions in the biotransformation of drugs - mechanism, enzymes, coenzymes (2h)</p> <p>20. Conjugation reactions with glutathione in the biotransformation of drugs - mechanism, enzymes, coenzymes (2h)</p> <p>21. Prodrugs (hydrolysis of esters and amides) (1h)</p> <p>22. Metabolic reactions of known drugs and xenobiotics (2h)</p> <p>23. Toxicity of chemicals and xenobiotics. (2h)</p> <p><u>Seminars (15 hours):</u></p> <p>1. Introduction to QSAR, graph theory and topological indices (4h)</p> <p>2. Stereoselectivity in drug metabolism (3h)</p> <p>3. Transport proteins, drug substrates, inhibitors and activators of P-gp. Drug toxicity (2h)</p> <p>4. Drug-drug and drug-xenobiotic interactions (3h)</p> <p>5. Inductions and inhibitions in biotransformation reactions (3h)</p> <p><u>Exercises (30 hours):</u></p> <p>1. QSAR and QSPR of sulfonamides (5h)</p> <p>2. Biotransformation of acetylsalicylic acid (5h)</p> <p>3. Biotransformation of salicylamide (5h)</p> <p>4. Metabolomics (5h)</p> <p>5. Examination of drug interactions based on predicted biotransformation reactions (5h)</p> <p>6. Problem based learning cases in drug metabolism (5h)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each</i>)	Class attendance	1.0	Research		Practical training	0.5
	Experimental work	0.5	Report		(Other)	

<i>activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Essay		Seminar essay		(Other)	
	Tests	1.0	Oral exam	2.0	(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Conditions for access to the final exam are regular attendance of classes, completed laboratory exercises and passing the exercises colloquium. The final exam consists of a written and an oral part, each of which contributes 50% to the total grade. The written exam consists of 10 questions, and in order to access the oral part of the exam, it is necessary to achieve 60% or more of the total number of points in the written exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Rendić, M. Medić-Šarić Metabolizam lijekova i odabranih ksenobiotika. Medicinska naklada, Zagreb 2012.			1	Online through the library	
	Hand-outs from the lectures				online	
Optional literature (at the time of submission of study programme proposal)	<p>1. J. B. Testa, S.D. Krämer, The Biochemistry of Drug Metabolism: Volume 1: Principles, Redox Reactions, Hydrolyses, Wiley-VCH, Verlag GmbH, Weinheim, 2008.</p> <p>2. J. B. Testa, S.D. Krämer, The Biochemistry of Drug Metabolism: Volume 2: Conjugations, Consequences of Metabolism, Influencing Factors, WileyVCH, Verlag GmbH, Weinheim, 2010.</p>					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation. 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Production of Pharmaceutical Formulations				
Code	FAR403	Year of study	4.			
Course teacher	Asst. Prof. Dario Leskur	Credits (ECTS)	5.0			
Associate teachers	Lovre Zekan, Ph. D Ana Petrić, MPharm	Type of instruction (number of hours)	L	S	E	F
			30	15	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Adopt and integrate knowledge about pharmaceutical dosage forms and their development and production, development, industrial production and release on the market of medicinal products, as well as knowledge of the principles of quality assurance, Good Manufacturing Practice (GMP) guidelines, other important documents of the quality assurance system and good laboratory practice.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Familiarize yourself with regulatory requirements, pharmacopoeia requirements and ISO standards used in the industrial production of medicines. 2. State and explain quality assurance and quality control procedures in the pharmaceutical industry.* 3. Explain and describe the technological procedures used in the industrial production of conventional and innovative pharmaceutical dosage forms.* 4. Choose a suitable technological procedure for the industrial production of the finished pharmaceutical dosage forms.* 5. Explain the principles of process control in the industrial production of medicines.* 6. State the physico-chemical and biopharmaceutical characteristics of excipients used in the production of finished pharmaceutical dosage forms.* 7. Describe the basics of technology and materials used in manufacturing of finished pharmaceutical dosage forms.* <p>* LO from set of LO Technological procedures in the industrial production of pharmaceutical formulations“Ž</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures:</u> <ol style="list-style-type: none"> 1. Introduction 2. Good Manufacturing Practice (GMP) 3. Pharmaceutical engineering 4. Product development (Quality by design) 5. Pre-formulation studies 6. Preclinical and clinical studies 7. Development of the conventional pharmaceutical dosage forms (sterile and non-sterile solutions, dry oral forms, semi-solid forms) 8. Primary containers in the pharmaceutical industry 9. Validation of production procedures 10. Production of sterile pharmaceutical dosage forms and prerequisites for sterile production 11. Continuous production and Real Time Release Testing 12. Quality control in the pharmaceutical industry 13. Operational realization of products - application of Lean methodology 14. Quality assurance during the development and realization of the drug 					

	<p>15. Placing the medicine on the market - the role of the Qualified person for the batch release</p> <p><u>Seminars and workshops:</u></p> <ol style="list-style-type: none"> Generic product development project Design of primary containers for sterile multidose dosage forms GMP Annex 1 Real Time Release Testing Review of the batch before the market release <p><u>Exercises:</u></p> <ol style="list-style-type: none"> Development and implementation of raw material compatibility tests - pre-formulation phase Qualification of equipment and cleanrooms Scale up – from laboratory to technical series Analysis of validation series, evaluation of results and conclusions Non-compliance and drug withdrawal process 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0.5	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0.5	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	4.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Regular lecture attendance is a requirement for the entry to the final exam. The final exam consists of written test.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Hand-outs from the lectures					online
	European Pharmacopoeia 10th Edition					
	EudraLex The Rules Governing Medicinal Products in the European Union. Good Manufacturing Practice					online
	ICH Quality Guidelines					online

Optional literature (at the time of submission of study programme proposal)	Shayne Cox Gad. Pharmaceutical Manufacturing Handbook: Production and Processes, 2008, Wiley.
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none">-Analysis of student evaluation of teaching work and teaching quality-Analysis of passing on exams- Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance-External evaluation.
Other (as the proposer wishes to add)	

NAME OF THE COURSE		Pharmaceutical Formulations				
Code	FAR404	Year of study	4.			
Course teacher	Asst. Prof. Ana Šešelja Perišin	Credits (ECTS)	5.0			
Associate teachers	Lovre Zekan, PhD, Ana Petrić, lecturer Mate Portolan, lecturer	Type of instruction (number of hours)	L	S	E	F
			30	15	15	0
Status of the course	Mandatory	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	<p>The aim of the course is to acquire knowledge about pharmaceutical forms of drugs, classical forms as well as advanced therapeutic systems. This includes the acquisition of knowledge about form-specific excipients, as well as knowledge of technologies for the preparation and production of pharmaceutical dosage forms.</p> <p>It is necessary to acquire knowledge about the necessary tests to determine the quality of the pharmaceutical dosage form.</p>					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Differentiate between liquid, semi-solid and solid pharmaceutical dosage forms of drugs and pharmaceutical forms of herbal drugs. * 2. Recognize the advantages and limitations of the application of different pharmaceutical dosage forms.* 3. Classify excipients, explain their use in the production of pharmaceutical dosage forms, and describe their influence on the stability and effectiveness of the drugs.* 4. Explain and describe the technological procedures for the production of pharmaceutical dosage forms.* 5. Recognize technologically significant incompatibilities of the drug and/or excipients and/or packaging.* 6. Manufacture and technologically evaluate different pharmaceutical dosage forms.* <p>* LO from set of LO Development of pharmaceutical formulations</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Lectures (30 hours):</u></p> <ol style="list-style-type: none"> 1. Introduction to the course, development of formulations and preformulation testing (2h) 2. Liquid dosage forms, solvents, water in pharmacy, solubility (2h) 3. Parenteral preparations and production conditions (2h) 4. Isotonicity, injections, production, quality control, stability (2h) 5. Infusion solutions, electrolytes, plasma expanders, nutritional preparations (2h) 6. Parenteral preparations of prolonged effect (injections, implants) (2h) 7. Emulsions, emulsifiers, excipients, pharmaceutical production, microemulsions, nanoemulsions (2h) 8. Suspensions, system stabilization, auxiliary substances, pharmaceutical production (2h) 9. Aerosols, propellant gases, drug delivery to the respiratory system, forms (2h) 10. Powders, capsules (hard, soft), excipients, pharmaceutical production (2h) 					

	<p>11. Tablets - application, excipients, dry and wet granulation and tablet making processes (2h)</p> <p>12. Tableting methods, pellets, effervescent preparations (2h)</p> <p>13. Tablet coating - coating procedures, film-coated tablets, sugar-coated tablets (2h)</p> <p>14. Quality control tests of tablets (2h)</p> <p>15. Preparations with a modified, delayed or prolonged release effect for oral administration (2h)</p> <p>16. Packaging (1h)</p> <p><u>Seminars (15 hours):</u></p> <p>1. Introductory seminar (1h)</p> <p>2. Excipients in the formulation of medicines (2h)</p> <p>3. Pharmaceutical forms of herbal drugs, extraction procedures (2h)</p> <p>4. Sterilization procedures and control, aseptic work (2h)</p> <p>5. Eye drops, nose drops, ear drops, solutions for various applications, syrups, excipients, production (2h)</p> <p>6. Semi-solid preparations - ointments, creams, pastes, excipients, production (2h)</p> <p>7. Eye ointments, therapeutic systems for ocular application, patches, transdermal preparations (2h)</p> <p>8. Suppositories, vagitories, bases, production, dosing (2h)</p> <p><u>Exercises (15 hours)</u></p> <p>1. Preparation and testing of solutions, emulsions and suspensions in accordance with prescribed pharmaceutical procedures (5h)</p> <p>2. Preparation and testing of syrups, tinctures and teas in accordance with prescribed pharmaceutical procedures (5h)</p> <p>3. Preparation and testing of pastes, medicinal ointments and suppositories in accordance with prescribed pharmaceutical procedures (5h)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1.5	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Conditions for access to the exam in Pharmaceutical Forms is regular attendance. Regular attendance of classes is a prerequisite for taking the Drug formulation exam. The exam consists of a written (multiple-choice questions) and an oral part, each of which contributes 50% to the total grade. In order to access the oral exam, it is necessary to achieve 60% of the required content in the written exam.					

Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	R. Senjković. Osnove oblikovanja lijekova. Školska knjiga, Zagreb, 2003.	30	
	Hand-outs from the lectures		online
Optional literature (at the time of submission of study programme proposal)	1. Kevin M. G. Taylor, Michael E. Aulton Aulton's Pharmaceutics, 5 th edition: The Design and Manufacture of Medicines, Elsevier, London, UK, 2018. 2. Loyd V. Allen, Jr. 11 th edition: Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. Lippincott Williams & Wilkins. Baltimor, Philadelphia, 2018.		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation. 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Extemporaneous preparations				
Code	FAR 405	Year of study	4			
Course teacher	Asst. Prof. Josipa Bukic	Credits (ECTS)	3.0			
Associate teachers	Lovre Zekan, Ph.D., Ana Petrić, MPharm	Type of instruction (number of hours)	L	S	E	T
			15	15	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	1. Acquisition of knowledge for the preparation of the main preparation in the pharmacy on the basis of a doctor's prescription 2. Acquisition of knowledge and skills necessary for the production, equipment and issuance of the main preparation 3. Acquiring the knowledge needed to dispense prescription drugs					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. To consider the physico-chemical and pharmacological properties of active and excipients in the preparation of extemporaneous medicines.* 2. Apply pharmaceutical calculations in the field of manufacturing and galenic production of medicines.* 3. Explain and describe the pharmaceutical-technological procedures for the production of pharmaceutical forms of extemporaneous medicines.* 4. Categorize packaging and accessories in the production of extemporaneous medicines.* 5. Manufacture extemporaneous medicines.* 6. Identify pharmaceutically significant incompatibilities in the production and packaging of extemporaneous medicines.* * LO from set of LO Manufacture of extemporaneous preparations and galenic medicines					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (15 student hours)</u>		<u>Number of hours:</u>			
	1. Community pharmacy legislation, extemporaneous preparations		5			
	2. Extemporaneous drugs production		4			
	3. Therapy individualization		3			
	4. Paediatric drug formulations		3			
	<u>Seminars (15 student hours)</u>		<u>Number of hours:</u>			
	1. Dose control		2			
	2. Isotonisation		2			
	3. Incompatibility		2			
	4. Dilution of the solutions		2			
	5. Alcohol dilution		2			
	6. Aseptic drug preparation		2			
	7. Prescriptions		3			
	<u>Exercises (15 student hours)</u>		<u>Number of hours:</u>			
	1. Preparation of liquid drug formulation		5			

	2. preparation of paediatric formulations		5			
	3. Preparation of semi solid formulations		5			
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	3.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Final written test.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	M. Bećirević, M.Jug, Magistralna receptura (praktikum) Zagreb, 2008 (vlastita naklada)					
	Formulae magistrales Croaticae, HLJK, Zagreb, 2011					
	Priručnici za rad u ljekarni					
	M. Bećirević, R.Senković, Oblikovanje lijekova (praktikum), Liber, Zagreb, 1997					
Optional literature (at the time of submission of study programme proposal)	1. Handbook of extemporaneous preparations, Pharmaceutical Press, London, 2010. 2. lectures					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Cosmetology				
Code	FAR406	Year of study	4			
Course teacher	Asst. Prof. Dario Leskur	Credits (ECTS)	5.0			
Associate teachers	Lovre Zekan, Ph.D., Ana Petrić, MPharm	Type of instruction (number of hours)	L	S	E	F
			30	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Acquire and integrate knowledge of the basic principles of dermatological cosmetology from a medical and technological standpoint. Understand the development of cosmetic preparations, their design, manufacturing technology, regulatory requirements and quality, as well as their safe use					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Classify raw materials and pharmaceutical dosage forms used in manufacture of the preparations intended to be used on the skin.* 2. Create and test formulations intended to be used on the skin.* 3. Choose a suitable formulation in regard to the type and condition of the skin.* 4. Relate the design of formulations intended to be used on the skin with the structure, function and condition of the skin.* 5. Manufacture formulations intended to be used on the skin according to the principles of patient-centered individual approach.* <p>* LO from set of LO Technological procedures in the production of dermatological formulations</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Lectures:</u></p> <ol style="list-style-type: none"> 1. Introduction 2. Legislation 3. Anatomy and physiology of skin and skin appendages, disorders of skin and skin appendages 4. Cosmetic ingredients 5. Manufacture and technology of cosmetic products 6. Skin cleansing products 7. Moisturizing products 8. Products for special skin concerns 9. Deodorants and antiperspirants 10. Sun care products, tanning products 11. Color cosmetics 12. Nail care products 13. Hair care products 14. Oral and dental care products 15. Baby care products 16. Skin damage models and their use in research 17. Non-invasive monitoring of the skin <p><u>Seminars and workshops:</u></p> <ol style="list-style-type: none"> 1. Skin type and status analysis 2. Choice of the cosmetic products based on the patients' skin type, status, individual needs and expectations 3. Cosmetic ingredients and safety 					

	4. Cosmetic ingredients available in community pharmacies 5. Patient consultation <u>Exercises:</u> 1. Manufacture, quality testing, packaging and labeling of the semisolid cosmetic products I 2. Manufacture, quality testing, packaging and labeling of the semisolid cosmetic products II 3. Sun protection 4. Manufacture, quality testing, packaging and labeling of the cosmetic lotions 5. Manufacture, quality testing, packaging and labeling of the color cosmetic products					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0.5	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0.5	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	4.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Regular lecture attendance is a requirement for the entry to the final exam. The final exam consists of written test.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	M. Čajkovac, Kozmetologija, Naklada Slap, Zagreb, 2000					
	G. Baki, K.S. Alexander. Introduction to cosmetic formulation and technology. 2015, Wiley					
	Hand-outs from the lectures					online
Optional literature	T. Mitsui New Cosmetic Science, Elsevier Science, Amsterdam, Netherlands, 1997.					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Biopharmacy				
Code	FAR407	Year of study	4.			
Course teacher	Asst. Prof. Ana Šešelja Perišin	Credits (ECTS)	4.0			
Associate teachers	Lovre Zekan, PhD, lecturer Ana Petrić, MPharm, lecturer	Type of instruction (number of hours)	L	S	E	F
			30	0	30	0
Status of the course	Mandatory	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to acquire knowledge and skills in the field of biopharmaceutics and their application in the development of new pharmaceutical forms with an appropriate route of drug administration, ensuring the optimal dose and dosing regimen of the drug, and for the purpose of increasing safety, adherence and proper use of drugs by patients. Also, the student will acquire additional knowledge about the biopharmaceutical characterization of drugs, as well as biological and biosimilar drugs, and get familiar with the latest trends in the development of innovative pharmaceutical dosage forms.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain the basic biopharmaceutical principles of the development of pharmaceutical forms of drugs.* 2. Describe the physiological and pathophysiological specificities of individual routes of drug administration.* 3. Choose the pharmaceutical form, site of application and dosage regimen to achieve optimal drug effectiveness and treatment outcome.* 4. Explain the influence of the physicochemical and biopharmaceutical characteristics of the drug on its effectiveness and safety of use.* 5. Evaluate the transfer of the drug across biological barriers depending on the pharmaceutical, technological and biopharmaceutical properties of the pharmaceutical form of the drug.* <p>* LO from set of LO Biopharmacy</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (30 hours):</u> <ol style="list-style-type: none"> 1. Introduction to biopharmacy 2. Fate of drugs in the body 3. Routes of drug administration: advantages, disadvantages and requirements 4. Physiological and pathophysiological parameters related to drug absorption after oral administration 5. Pharmaceutical forms of adjusted release 6. Biopharmaceutical approach in the development of oral pharmaceutical dosage forms 					

	<p>7. Biopharmaceutical characterization of drugs</p> <p>8. <i>In vitro</i> models in biopharmaceutical characterization of therapeutic systems</p> <p>9. Development of pharmaceutical dosage forms for parenteral administration</p> <p>10. Development of pharmaceutical dosage forms for nasal and pulmonary administration</p> <p>11. Development of pharmaceutical dosage forms for topical and transdermal application</p> <p>12. Development of pharmaceutical dosage forms for ophthalmic use</p> <p>13. Development of biological drugs</p> <p>14. Biosimilar medicines</p> <p>15. Innovative pharmaceutical forms</p> <p><u>Exercises (30 hours)</u></p> <p>1. Examination of <i>in vitro</i> drug release kinetics from oral pharmaceutical dosage forms</p> <p>2. Examination of <i>in vitro</i> drug release kinetics from parenteral pharmaceutical dosage forms</p> <p>3. Comparison of pharmaceutical dosage forms of immediate and modified release</p> <p>4. Bioavailability and bioequivalence</p> <p>5. <i>In vitro</i> models in biopharmaceutical characterization</p> <p>6. Problem tasks in biopharmaceutics</p> <p>7. Application of computer methods in biopharmaceutics</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	3.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The conditions for taking the Biopharmacy exam are regular attendance. The exam is written type with multiple-choice questions. To pass the exam, it is necessary to achieve 60% or more of the total number of points in the written exam.					

Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Leon Shargel, Andrew B.C. Yu. 7th edition: Applied Biopharmaceutics & Pharmacokinetics, McGraw-Hill Education, 2016.		
	Hand-outs from the lectures		online
Optional literature (at the time of submission of study programme proposal)	Alexander T. Florence, David Attwood. 6 th edition: Physicochemical Principles of Pharmacy In Manufacture, Formulation and Clinical Use. Pharmaceutical Press, UK, London, 2015.		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation. 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Pharmaceutical Toxicology				
Code	FAR408	Year of study	4			
Course teacher	Prof. Davorka Sutlović	Credits (ECTS)	4.5			
Associate teachers	Asst. Prof. Zlatka Knezović	Type of instruction (number of hours)	L	S	E	F
			30	15	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ul style="list-style-type: none"> - Acquiring knowledge to understand the basic concepts and principles of toxicology, understanding the principles of entry of toxic substances into the body as well as recognizing the types of toxic substances. - Acquiring knowledge to identify toxic substances that can endanger human health. - Acquiring knowledge about the most common acute poisonings and poisonings with a lethal outcome, responsibility for the occurrence, treatment and prevention. - Acquisition of knowledge for the possibility of detection of toxic substances in biological material. - Acquiring knowledge of directives and laws prescribed by the Republic of Croatia and the European Union in the handling of hazardous chemicals. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe basic toxicological concepts.* 2. Observe the ways and the difference between the entry of toxic substances: through the skin, respiratory tract and digestive tract. 3. Recognize the types of toxic substances that can endanger human health. 4. Assess the danger, risk and safety of poisons/medicines for human health and the environment. * 5. Prevent the possibility of endangering safety when handling different chemical substances. 6. Know how to choose the correct method and instrumental technique for the determination of toxic substances in biological material. 7. Analyze the toxicity (mechanisms) of drugs, side effects of drugs, excipients in drugs, dietary supplements, interactions (drug/drug, food/drug) and individualization of therapy (TDM) in order to protect and preserve health.* 8. Interpret the toxicological findings. <p>*LO from set of LO Pharmaceutical Toxicology</p>					
Course content broken down in detail by weekly class schedule (syllabus)	Course type	Teaching unit			Hours	
	L1	Introduction to toxicology- a short historical overview Basic toxicology terms			1	
	L2	Good laboratory practice			1	
	L3	The entry of toxins into the body and their impact			2	
	L4	Samples for chemical and toxicological analysis			1	
	L5	Chemical and toxicological analysis			2	
	L6	Instrumental analysis			2	
	L7	Addictive drugs - Part I			2	

	L8	Addictive drugs - Part II	2			
	L9	Alcohol and driving under the influence	2			
	L10	Gaseous and inorganic toxins	2			
	L11	Industrial organic chemicals	2			
	L12	Pesticides	2			
	L13	Ecotoxicology, Military Toxicology	2			
	L14	Chemical accidents and disasters	2			
	L15	Plant poisons	1			
	L16	Animal poisons	1			
	L17	Toxicology of metals	3			
	S1	Good laboratory practice	1			
	S2	Calibration curves	1			
	S3	Addictive substances in hair samples	1			
	S4	Student seminars	5			
	S5	Food toxicology - from sample to analysis	3			
	S6	Laboratory accreditation	2			
	S7	Writing toxicological findings - examples	2			
	E1	Sampling for chemical toxicological analysis	1			
	E2	Extraction of drugs, addictive substances and other substances	1			
	E3	Instrumental analysis: GCMS and GC	3			
	E4	Volatile organic compounds concentration in biological samples	1			
	E5	Determination of drug concentration by HPLC method	2			
	E6	Spectrophotometric methods in toxicology	2			
	E7	Determination of metals in food samples	2			
E8	Determination of additives and pesticides in food samples	3				
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	0.5	Research		(Other)	
	Experimental work	0.5	Report		(Other)	
	Essay		Seminar presentation	0.5	(Other)	
	Tests		Oral exam	1.0	(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Testing types		Efficacy (score)	Proportion in the evaluation (%)		
	The presence and activity during lectures and seminars- 100 % presence		5	5		
	Experimental work		10	10		
	Seminar- presentation		10	10		

	Written exam	40	40
	Oral exam	35	35
	Total	100	100
	The success and grade ratio		
	The achieved percentage (%)	Criteria	Grade
	60-70	Minimal criteria	2
71-80	Average success	3	
81-90	Above-average success	4	
91-100	Extraordinary success	5	
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Sutlović D., i sur., Osnove forenzične toksikologije	0	https://webknji.zara.hr/
	Plavšić F., Žuntar I., Uvod u analitičku toksikologiju		
	Duraković Z., i sur. Klinička toksikologija, Zagreb, Grafos, 2000.		
Optional literature (at the time of submission of study programme proposal)	<ul style="list-style-type: none"> - Plavšić F., Wolf-Čoporda A., Lovrić Z., Čepelak D., Siguran rad s kemikalijama. - Sutlović D., i sur. Toksikologija hrane. - Moffat A. C., Osselton M. D., Widdop B., Clarke's Analysis of Drugs and Poisons, 3rd ed. London: Pharmaceutical Press, 2004.; - Smith F. P., Handbook of Forensic drug Analysis. Elsevier Academic Press, 2005.; - Gerhards P., Bons U., Sawazki J., Szigan J., Wertmann A., GC/MS in Clinical Chemistry. WILEY-VCH Verlag GmbH. Weinheim; 1999. 		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation. 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Pharmaceutical Legislation				
Code	FAR409	Year of study	4			
Course teacher	Asst. Prof. Doris Rušić	Credits (ECTS)	2.5			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30	0	0	0
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	1 Acquiring knowledge of legislation on medicinal products and medical devices at EU level and the Republic of Croatia and other health products 2 Acquisition of knowledge of pharmacy legislation and regulations relevant to pharmacy 3. Learn and acquire skills for applying pharmaceutical legislation in practice					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Explain the features of health care and insurance in the Republic of Croatia.* 2. List and explain the regulations that regulate pharmacy activity in the Republic of Croatia.* 3. State and explain the rules for prescribing drugs that can be used in treatment within the framework of health care from mandatory health insurance or through supplementary health insurance.* 4. State and explain the regulations related to the dispensing of medicines and medical products.* 5. Explain the principles and system of measures to ensure and reduce the risk to the life and health of patients.* 6. Explain the differences in regulations related to medicinal products, medical devices, food supplements and cosmetic products.* *LO from set of LO Regulations in the field of healthcare					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures</u> 1 Introduction to Croatian and European legislation (2 h) 2 Law on Medicinal Products (2 h) 3 Procedures and methods of placing the finished product on the market (2h) 4 Good manufacturing practice and production permits (2 h) 5 Entry or importation of medicinal products which are not authorised in the Republic of Croatia (2 h) 6 Good distribution practice (2 h) 7 Pharmacovigilance (2 h) 8 Medical Devices (2 h) 9 Community Pharmacy in Croatia (2 h) 10 Health Care and Sanitary Inspection (2 h) 11 Placing on the market and labeling and advertising of traditional herbal medicines (2 h) 12 Compulsory Health Insurance (2 h) 13 Suppression of Narcotic Drug Abuse (2 h) 14 Dietary Supplements (2 h) 15 Regulated Professions (2 h)					
	<input checked="" type="checkbox"/> lectures		<input type="checkbox"/> independent assignments			

Format of instruction	<input type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	2.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam with 20 multiple choice questions.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Good pharmacy practice				Online	
	Good pharmacovigilance practices				Online	
	Directive 2005/36/EC				Online	
	Directive 2001/83/EC				Online	
	Good distribution practice				Online	
	Good manufacturing practice				Online	
	Regulation (EC) No 1924/2006				Online	
Regulation (EC) No 1223/2009				Online		
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Scientific Methodology in Pharmacy				
Code	FAR410	Year of study	4.			
Course teacher	Prof. Ana Marušić	Credits (ECTS)	4.0			
Associate teachers	Ivan Buljan, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			15	15	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to teach students to master the principles of research methodology, scientific foundations of pharmacy and pharmaceutical informatics and statistics, and to apply these in an independent creation of a research plan for a diploma work					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Classify preclinical trials.* 2. Compare the results of in vivo and in vitro testing. * 3. Asses the results of testing the effectiveness and safety of medicines.* 4. Understand the phases of clinical trials.* 5. Recognise the types and ways of approving clinical trials.* 6. Asses different presentations of data and results from clinical trials.* 7. Use electronical information sources about medicines.* 8. Use statistical data such as absolute risk reduction (ARR), relative risk reduction (RRR), number needed to treat (NNT) or number needed to harm (NNH), relative risk (RR) i odds ratio (OR), and know how to calculate it from raw data.. 9. Apply the concepts of sensitivity (SN) i specificity (SP) of diagnostic tests, positive predictive value (PPV), negative predictive value (NPV), decision tree and sensitivity analysis, and know how to calculate from raw data. 10. Plan your own study <p>*LO from set of LO Preclinical and clinical trials</p>					
Course content broken down in detail by weekly class schedule (syllabus)	Day/topic	Lectures	Seminars	Practicals		
	1. Science and scientific information	3 h: Science	1 h: Scientific information			
	2. Study designs	2 h: Study designs, principles of EBM*	2 h: Responsible research			
	3. Scientific journals and reports	2 h: Scientific journals and reports	2 h: Criteria, excellence, databases			
	4. Structure of scientific article	2 h: Structure of scientific article		3 h: Research articles in pharmacy		
	5. Finding scientific information	2 h: Bibliographical databases		3 h: Searching database		

	6 Statistical thinking	2 h: Statistical thinking	2 h: Statistical outcomes, confidence intervals		
	7. Assessing strength of evidence		2 h: Clinical hierarchy of evidence	3 h: CONSORT reporting guidelines	
	8. Principles of research planning, responsible research		2 h: EBM	3 h: EBM, PICO	
	9. Evidence-based pharmacy	2 h: Planning research	2 h: Planning own research-1 (form)		
	10. Planning own research		2 h: Planning own research-2 (analysis of proposed topics)	3 h: Creating own research plan	
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.				
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	2.5	Research		Practical training
	Experimental work		Report		(Other)
	Essay		Seminar essay		(Other)
	Tests	0.5	Oral exam		(Other)
	Written exam		Project	1.0	(Other)
Grading and evaluating student work in class and at the final exam	The exam grade includes: a) score from 4 colloquia (3 rd , 5 th , 7 th and 9 th day), each with 5 open-ended questions – max 20 points b) mark for the research plan – max 30 points Total: 50 points (100%); grades: satisfactory ≥60%, good: 61-70%, very good: 71-80%, outstanding: ≥81%.				
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media	
	Marušić M, urednik. Uvod u znanstveni rad u medicini. 6. izd. Zagreb: Medicinska naklada; 2019.		20		
	Ferenczi E, Muirhead N. Statistika i epidemiologija u jednom potezu. Zagreb: Medicinska naklada; 2011.		20		
	Course materials			Merlin online learning platform	

	The European Code of Conduct for Research Integrity		
	HTA 101: Introduction to Health Technology Assessment		
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Professional Practice				
Code	FARSP	Year of study	4.			
Course teacher	Prof. Darko Modun	Credits (ECTS)	4.0			
Associate teachers	Mentors - pharmacists	Type of instruction (number of hours)	L	S	E	F
			0	0	0	120
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ol style="list-style-type: none"> To get to know the structure and organization of pharmacy practice in a community pharmacy. To acquire basic pharmacy competencies important for independent and teamwork in community pharmacies. To familiarize yourself with the basic principles and application of Good Pharmacy Practice. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> To make use of professional literature in the pharmacy. * To describe the method of classification and storage of medicines and medicinal substances and the system ordering and circulation of medicines. * To differentiate between different drug dispensing regimens (BR and BRX). * To differentiate medical products, nutritional supplements (herbal preparations, vitamins and minerals, dietary products, etc.) and cosmetic preparations. * To describe the organization and scope of work of the galenic laboratory and the laboratory for quality control of galenic preparations and identification of medicinal substances. * To prepare extemporaneous formulations and participate in the preparation of galenic formulations under supervision of the mentor. * <p>*LO from set of LO Professional Practice</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Field teaching (by days, in community pharmacy)</u></p> <ol style="list-style-type: none"> Getting to know the structure and organization of pharmacy practice in a community pharmacy. Acquaintance with mandatory professional literature and official books in a pharmacy. Classification of medicines and medicinal preparations. Storage of medicines and medicinal substances (special conditions). Getting to know the IT solution that enables all business and professional processes in the pharmacy. Familiarization with the ordering system and participation in the procedure of receiving medicines and other products sold in the pharmacy, checking expiration dates, and inventory tracking. Getting to know the relationship between the pharmacy/institution and business stakeholders (administrative part of the pharmacy business). Application of pharmacopeial and related professional and relevant legal regulations in a pharmacy. Getting to know the group of food supplements. Getting to know the group of drugs that can be issued without a prescription (BR and BRX). 					

	<p>11. Comparison of similar and/or related preparations from different manufacturers.</p> <p>12. Participation in the production of extemporaneous formulations under the strict supervision of a pharmacist mentor.</p> <p>13. Participation in the production of galenic formulations.</p> <p>14. Getting to know the CEZIH system for prescriptions and remittances for orthopedics aids using pharmacy software.</p> <p>15. Practical work to the extent determined by the student's mentor in the pharmacy</p>					
Format of instruction	<input type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input checked="" type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input checked="" type="checkbox"/> practical work in a pharmacy		
Student responsibilities	Completed practical work in a pharmacy under the supervision of the assigned mentor-pharmacist, and preparation of the Report on the completed Professional Practice					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training	3.0
	Experimental work		Report	1.0	(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	To successfully pass the Professional Practice, students have to regularly attend fieldwork, actively participate in practical work in the pharmacy and prepare a report on the completed Professional Practice, which is signed by the approved mentor-pharmacist.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Registar lijekova u Hrvatskoj				10	
	Hrvatska farmakopeja, 2007, vol. 1.				0	Online
	European Pharmacopoeia, 10th Edition				10	
Optional literature (at the time of submission of study programme proposal)	Other necessary professional literature is available to students in pharmacies					
Quality assurance methods that ensure the acquisition of exit competences	<p>-Analysis of student evaluation of teaching work and teaching quality</p> <p>-Analysis of passing on exams</p> <p>- Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance</p> <p>-External evaluation</p>					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Pharmaceutical care and self-medication				
Code	FAR501	Year of study	5			
Course teacher	Asst. Prof. Doris Rušić	Credits (ECTS)	6.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			30	15	45	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	1 Get to know the basic settings and principles of pharmacy care, models of data collection and revision of medication history 2 To learn the principles of rational application of pharmacotherapy by promoting persistence and assessing priorities in the pharmaceutical care plan 3 To adopt the skill of making decisions in the process of pharmaceutical care and solving problems caused by the use of drugs on the way to the therapeutic goal 4 Learn to follow therapeutic guidelines in the care of patients with chronic diseases 5 Adopt criteria for safe and responsible self-medication					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Explain and discuss the principles of pharmaceutical care.* 2. Analyze the role of pharmacists in monitoring treatment outcomes.* 3. To analyze the patient's individual therapeutic experience.* 4. Suggest ways to improve the patient's adherence.* 5. Create a pharmaceutical care plan for the patient.* 6. Recognize conditions in which self-treatment is not recommended and in which it is necessary to refer the presented patient to a doctor. \$ 7. Suggest a specific product for self-medication, its application method, dosage regimen and duration of treatment in the presented case. \$ 8. Recommend the measures that need to be taken if there is no improvement in symptoms during the treatment with OTC medicinal product within the stipulated time. \$ 9. Recognize possible adverse effects, contraindications and interactions of OTC products in the presented case. \$ 10. List the basic parts of the prescription, the ways of prescribing medicinal products and the characteristics of forged prescriptions. # 11. Differentiate between prescriptions and indications according to which the medicinal product is categorized according to insurance regulations. # 12. Analyze the correctness of the prescribed prescription (control of dose, dosing regimen, pharmaceutical form, compliance with applicable regulations). # 13. Demonstrate the dispensing of the medical product according to the correct order. # *LO from set of LO Pharmaceutical Care # LO from set of LO Dispensing medicines and medical product \$ LO from set of LO Self-Medication					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures</u> 1 Pharmaceutical care for patients with chronic diseases (hypertension, diabetes, asthma) (4 h) 2 Pharmaceutical care in self-care of elevated body temperature and pain (7 h) 3 Pharmaceutical care in self-care of gastrointestinal complaints (6 h) 4 Pharmaceutical care in self-care of respiratory diseases (3 h) 5 Pharmaceutical care in self-care of urogenital infections (2 h) 6 Pharmaceutical care in self-care of skin diseases (2 h)					

	<p>7 Other indications in self-care (2 h) 8 Home and travel pharmacy (1 h) 9 Vitamins and minerals (3 h)</p> <p><u>Seminars</u> 1. Evidence in pharmacy (3 h) 2. Levels of evidence in self-care of pain – student seminars (2 hours) 3. Levels of evidence in self-care of gastrointestinal complaints - student seminars (2 hours) 4. Levels of evidence in self-care of respiratory diseases - student seminars (2 hours) 5. Levels of evidence in self-care of urogenital infections - student seminars (2 hours) 6. Levels of evidence in self-care of skin diseases - student seminars (2 hours) 7. Levels of evidence in self-care of other indications - student seminars (2 hours)</p> <p><u>Exercises</u> 1. Consultation of a patient with asthma - cases and inhalation technique (5 h) 2. Consultation of a patient with hypertension - cases (5 h) 3. Consultation of a patient with diabetes - cases (5 h) 4. Report of suspected drug adverse effect and safety of drug use - cases (5 h) 5. Self-care of elevated body temperature and pain - cases (5 h) 6. Self-care of gastrointestinal complaints - cases (5 h) 7. Self-care of respiratory diseases - cases (5 h) 8. Self-care of urogenital infections - cases (5 h) 9. Self-care of skin diseases - cases (5 h)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1.0	(Other)	
	Tests		Oral exam	2.0	(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam with 45 multiple choice questions and oral exam					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	CASI: Priručnik za samoliječenje. Zagreb: Hrvatska udruga proizvođača bezreceptnih proizvoda; 2017.			30	Online, besplatno	
Bukić J, Rušić D, urednici. Priručnik za stručno osposobljavanje – STUDENTI. Split: Sveučilište u Splitu; 2020.			50			

	GINA guideline		Online
	ADA guidelines		Online
	ESC guidelines		Online
	EASD guidelines		Online
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation. 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Clinical Pharmacology and Pharmacoeconomics				
Code	FAR502	Year of study	5			
Course teacher	Assoc. Prof. Ivana Mudnić	Credits (ECTS)	4.5			
Associate teachers	Prof. Damir Fabijanić, Assoc. Prof. Daniela Marasović – Krstulović, Assist. Prof. Diana Jurić, Ana Marija Dželalija, PhD, Marija Stipić, PhD, Jurica Nazlić, MD	Type of instruction (number of hours)	L	S	E	F
			30	15	15	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>1. To teach the student about methods in drug discovery and development and the methodology of clinical trials in accordance with evidence-based medicine and good clinical practice.</p> <p>2. To apply previously acquired basic pharmacological knowledge in practical work by analysing therapeutic lists of patients of the Department of Clinical Pharmacology with Toxicology.</p> <p>3. To familiarize students with the pharmacological principles of individualized treatment, and personalized medicine, targeted therapy, and pharmacogenomics.</p> <p>4. To acquire knowledge about the economic evaluation of drugs by comparing the costs and outcomes of pharmacotherapy, and to develop skills that will be helpful in critical evaluation of the economic profitability of health interventions.</p>					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Make a distinction between the types and phases of clinical trials and the ways how clinical trials get approval 2. List and explain the most important guidelines for individual pharmacotherapeutic groups in the rational pharmacotherapy 3. List and explain routes of administration, main indications, contraindications, side effects and interactions of the most commonly used drugs. 4. Critically evaluate the literature and existing databases in the field of pharmacogenetics and pharmacogenomics and propose the implementation of pharmacogenetics/pharmacogenomics in the individualized pharmacotherapy. 5. Use quality electronic pharmacological data basis 6. List and describe the most important pharmacoeconomic analyses* 7. Evaluate the role and principles of pharmacoeconomic analysis in determination of the drug cost* 8. Read and explain the results of pharmacoeconomic analysis, and assess the relevance of pharmacoeconomic evaluations in the health system* 9. Perform the simplest pharmacoeconomic analyses* 10. Correlate the fundamental theoretical grounds and practical principles in pharmacoeconomic modelling* <p>* LO from set of LO Pharmacoeconomics</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Lectures (hours):</u></p> <p>L1 Clinical trials: design and regulatory guidance; drug discovery and development (2)</p> <p>L2 Health economics and pharmacoeconomics (2)</p> <p>L3 Types of pharmacoeconomic evaluations and modelling (2)</p> <p>L4 Antimicrobial prescribing guidelines; clinical pharmacology of antibiotics (2)</p> <p>L5 Guidelines for pharmacological treatment of atherosclerotic cardiovascular disease; clinical pharmacology of antianginal drugs (2)</p>					

	<p>L6 Guidelines for antiplatelet and anticoagulant therapy; clinical pharmacology of antiplatelet, anticoagulant and fibrinolytic drugs (1) L7 Hypertension guidelines; clinical pharmacology of antihypertensive drugs (2) L8 Guidelines on acute therapy and management of anaphylaxis, allergic and anaphylactoid reactions (1) L9 Clinical pharmacology of immunomodulatory drugs (1) L10 Clinical pharmacology of biological drugs; biosimilar drugs (1) L11 Pharmacotherapy guidelines in asthma and chronic obstructive pulmonary disease (1) L12 Pharmacotherapy guidelines in diabetes (2) L13 Guidelines for prescribing anxiolytics and sedatives (2) L14 Pharmacotherapy of depressive and psychotic disorders (2) L15 Individualization of treatment and personalized medicine (2) L16 Use of drugs in patients with impaired kidney and liver function (1) L17 Age-related changes in pharmacotherapy: children and the elderly (1) L18 Medications in pregnancy and breastfeeding (1) L19 Adverse effects of drugs (1) L20 Drug interactions (1)</p> <p><u>Seminars (hours)</u> S1 Role of the pharmacist in clinical trials; the ethics of clinical trials; placebo (2) S2 Pharmacoeconomic analysis: cost-benefit analysis; cost and effectiveness analysis (2) S3 Evaluation of a pharmacoeconomic analysis (2) S4 Therapeutic guidelines as the basis of rational pharmacotherapy (1) S5 Guidelines for the management of heart failure (2) S6 Clinical pharmacology of hypolipemic drugs (1) S7 Pain management guidelines (2) S8 Guidelines for the treatment of ulcer disease and inflammatory bowel disease (1) S9 Pharmacogenomics and pharmacogenetics; targeted therapy (1) S10 Gene polymorphism and drug use (1)</p> <p><u>Practice (hours)</u> P1 Clinical trials in practice; clinical research registries (2) P2 Clinical pharmacology in clinical practice (4) P3 Searching databases with verified information about medicines (Mediately, HZZO, HALMED, Drugs.com, Medscape, Toxnet, EudraVigilance); case reports from clinical practice (3) P4 Acute drug poisoning: examples from clinical practice (2) P5 Hospital drugs and therapeutics committee; role of the pharmacist (2) P6 Hospital pharmacy management (2)</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each	Class attendance	1.0	Research		Practical training	0.5
	Experimental work		Report		(Other)	

<i>activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Essay		Seminar essay		(Other)	
	Tests		Oral exam	1.5	(Other)	
	Written exam	1.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Requirements for taking the final exam in Clinical Pharmacology and Pharmacoeconomics is regular attendance to all teaching activities during the course. The exam consists of a written (test with 60 questions with one correct answer) and an oral part, and in order to access the oral part of the exam, it is necessary to collect a total of 36 points on the test.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	1. Francetić I., Vitezić D. Klinička farmakologija, 2. promijenjeno i dopunjeno izdanje. Zagreb: Medicinska naklada, 2014.					
	2. Francetić I. i suradnici. Farmakoterapijski priručnik, 7. izdanje. Zagreb: Medicinska naklada, 2015.					
Optional literature (at the time of submission of study programme proposal)	Katzung BG. (urednik), "Temeljna i klinička farmakologija", hrvatski prijevod 14. izdanja, Zagreb, Medicinska naklada, 2020.					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation. 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Clinical Pharmacy and Pharmacotherapy				
Code	FAR503	Year of study	5.			
Course teacher	Asst. Prof. Josipa Bukić	Credits (ECTS)	7.0			
Associate teachers	Jelena Kačić, MPharm Antonija Banić, MPharm	Type of instruction (number of hours)	L	S	E	T
			45	15	30	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Get to know the therapeutic and adverse effects and indications of drugs from the main pharmacotherapeutic groups, with special emphasis on issues regarding safety and efficacy. Understand the role of the clinical pharmacist in identifying and solving pharmacotherapeutic problems.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Consider the established diagnosis and determine therapeutic goals* 2. Critically evaluate the prescribed therapy for the patient shown (therapeutic problems and medication errors)* 3. Propose an appropriate intervention to solve the therapeutic problem* 4. Assess the risk of using certain drugs for risk groups of patients* 5. Recognize clinically significant contraindications and interactions of adverse drug reactions of the drug* 6. Propose methods of monitoring the safety and effectiveness of medication administration* 7. Apply the principles of evidence-based medicine in the management of the presented patient* <p>* LO from set of LO Clinical Pharmacy and Pharmacotherapy</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (45 student hours)</u>		<u>Number of hours:</u>			
	1. Development of clinical pharmacy – the introduction				1	
	2. Use of pharmacokinetic principles in clinical practice				2	
	3. Therapeutic drug monitoring				2	
	4. Medical errors in clinical practice				2	
	5. Assessment of clinical outcomes and therapy effectiveness				1	
	6. Basic laboratory tests and results in pharmacy				2	
	7. Pharmacoeconomic aspects of rational pharmacotherapy				1	
	8. Adverse drug reactions, drug safety, pharmacovigilance				2	
	9. Drug interactions				2	
	10. Pharmacotherapy of central nervous system diseases				7	
	11. Pharmacotherapy of cardiovascular diseases				7	
	12. Pharmacotherapy of metabolic diseases				4	
	13. Pharmacotherapy of respiratory diseases				5	
	14. Pharmacotherapy of infectious diseases				4	
	15. Pharmacotherapy of malignant diseases				3	
	<u>Seminars (15 student hours)</u>		<u>Number of hours:</u>			
1. Self-medication				2		
2. Medication use during pregnancy and lactation				2		
3. Medication use in paediatric patients				2		
4. Medication use in geriatric patients				2		

	5. Medication use in renal and liver disease				2
	6. Herbal drugs				2
	7. Chronic diseases pharmacotherapy				3
	<u>Exercise (30 student hours)</u>				<u>Number of hours:</u>
	1. Evidence based pharmacy				5
	2. Reliable medication information				5
	3. Medical anamnesis and pharmacotherapy outcomes				5
	4. Drug safety and interaction – clinical cases				5
	5. Paediatric, geriatric, liver disease and kidney disease clinical cases				5
	6. Case reports of chronic diseases				5
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.				
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance		Research		Practical training
	Experimental work		Report		(Other)
	Essay		Seminar essay		(Other)
	Tests		Oral exam	3.0	(Other)
	Written exam	4.0	Project		(Other)
Grading and evaluating student work in class and at the final exam	Regular attendance of classes is a prerequisite for taking the exam in Clinical Pharmacy and Pharmacotherapy. The exam consists of a written and an oral part. For a passing grade on the written part of the exam requires 60% of the total number of points.				
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media
	-Katzung BG, Masters S, Trevor AJ. „Basic and clinical pharmacology“				
	CASI priručnik za samoliječenje				
Optional literature (at the time of submission of study programme proposal)	1. Walker R., Whittlesea C. Clinical Pharmacy and Therapeutics, 5th ed., Churchill Livingstone, Edinburgh, 2012 2. Lecture materials				
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Committee for Quality Assurance -External evaluation.				
Other (as the proposer wishes to add)					

NAME OF THE COURSE		Clinical Laboratory Diagnostic				
Code	FAR504	Year of study	5			
Course teacher	Asst .Prof. Leida Tandara	Credits (ECTS)	3.5			
Associate teachers	Asst. Prof. Daniela Šupe-Domić Asst. Prof. Marijan Tandara Asst. Prof. Nada Bilopavlović	Type of instruction (number of hours)	L	S	E	F
			30	15		
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to explain the role of laboratory testing in the diagnostic processing and to explain application of laboratory protocols by tests of appropriate sensitivity and specificity considering clinical diagnosis.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain the significance of laboratory tests for monitoring and evaluating the outcome of treatment.* 2. Assess the impact of analytical and biological (patient characteristics) factors on laboratory results.* 3. Explain the influence of the biological effects of drugs on the laboratory results.* 4. Explain the influence of analytical interferences of drugs on laboratory results.* 5. Explain the principles of therapeutic drug monitoring (which, when, why).* 6. Present the importance of laboratory tests related to cardiovascular, liver, kidney diseases, diseases of the hematopoietic system, gastrointestinal, pulmonary, endocrinological disorders, disorders of the acid-base system and electrolytes. <p>*LO from set of LO Laboratory diagnostics</p>					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (30 student hours)</u> <ol style="list-style-type: none"> 1. The role and place of laboratory testing in the treatment of patients 2. From the sample to the laboratory findings (pre-analytical, analytical and post-analytical phase) 3. Biological variation of biochemical and hematological components of blood 4. Reference values 5. Evaluation of the results of laboratory tests 6. Water and electrolytes, acid-base balance 7. Automation and computerization in the clinical laboratory 8. Laboratory diagnosis of diseases of the gastrointestinal system 9. Laboratory diagnostics of diseases of the heart and blood vessels 10. Laboratory diagnosis of kidney disease 11. Metabolic syndrome 12. Interferences – the influence of endogenous and exogenous factors on laboratory findings 		No. of hours 1 2 2 1 2 2 1 2 2 2			

	13. Principles of hormonal regulation	2			
	14. Laboratory diagnostics of hematological diseases	2			
	15. Laboratory diagnostics of platelet and hemostasis diseases	2			
	16. Determination of drug concentration during therapy	2			
	17. Point of care testing (POCT)	1			
	<u>Seminars (15 student hours)</u>	No. of hours			
	1. Determination of electrolyte concentration and acid-base status	1			
	2. Point of care testing (POCT)	1			
	3. Biochemistry and diagnosis of malignant tumors	1			
	4. Immunochemical techniques in laboratory diagnostics	1			
	5. Laboratory diagnosis of autoimmune diseases	1			
	6. Laboratory diagnosis of thyroid diseases	1			
	7. Laboratory monitoring of pregnancy	1			
	8. Diseases of erythrocytes and leukocytes	1			
	9. Disorders of hemostasis	1			
	10. Measurement of drug concentration in biological material (importance of sensitivity and specificity of methods)	2			
	11. Monitoring of anticoagulant therapy	1			
	11. Influence of drugs on the results of laboratory analyses	2			
	12. Analytical interferences - impact on laboratory findings	2			
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work	<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.				
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance		Research		Practical training
	Experimental work		Report		(Other)
	Essay		Seminar essay	0.5	(Other)
	Tests		Oral exam		(Other)
	Written exam	3.0	Project		(Other)
Grading and evaluating student work in class and at the final exam	Written exam.				
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media	
	Topić E, Primorac D, Janković S, Štefanović M. urednici. Medicinsko biokemijska dijagnostika u kliničkoj praksi. Zagreb: Medicinska naklada; 2018. 2. dopunjeno i izmjenjeno izdanje				

	Mary Lee. Basic Skills in Interpreting Laboratory Data. 6th ed. Bethesda, MD: American Society of Health-System Pharmacists. 2017.		
Optional literature (at the time of submission of study programme proposal)			
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Pharmaceutical Ethics and Deontology				
Code	FAR505	Year of study	5			
Course teacher	Prof. Darko Duplančić	Credits (ECTS)	2.0			
Associate teachers	Prof. Marija Definis-Gojanović Asoc. Prof. Slavica Kozina, Asoc. Prof. Joško Božić	Type of instruction (number of hours)	L	S	E	T
			30	0	0	
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The aim of the course is to acquaint students with the principles of professional ethics, pharmacy ethical codes, professional tasks of pharmacists and the role of drugs and the pharmaceutical industry in society. The course will provide an insight into various problems/issues of pharmaceutical ethics and help to understand complex ethical issues in pharmaceutical practice and in biomedical research. Special emphasis will be placed on professional and polite communication skills with patients and colleagues.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Present the preferred way of communicating in everyday work within a multidisciplinary team, in accordance with the code of professional ethics.* 2. Describe possible sources of conflict of interest between professional principles of pharmacists and legal provisions.* 3. Analyze the relationship between patient loyalty and marketing or other interests.* 4. Apply the rules of pharmacy ethical codes.* 5. Explain the meaning of ethics in everyday pharmacy work.* *LO from set of LO Pharmaceutical Ethics					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures (30 hours): <ol style="list-style-type: none"> 1. Basic principles of bioethics (3 hours) 2. Introduction to pharmacy ethics and deontology (3 hours) 3. Binding ethical conventions in pharmacy (2 hours) 4. Ethical principles in providing pharmacy care (2 hours) 5. Recognizing, processing and solving ethical problems (2 hours) 6. Communication skills (3 hours) 7. Relationship between pharmacist and patient (2 hours) 8. Relations with colleagues (2 hours) 9. Ethical issues in science (2 hours) 10. Ethical issues in clinical research (2 hours) 11. Safe and rational use of medicines (2 hours) 12. Scandals in pharmacy (2 hours) 13. Ethical issues in the pharmaceutical industry (3 hours) 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			

Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	0.2	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.8	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Final written exam.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	1. V. Grdinić, J. Vuković, Farmaceutska etika, deontologija i praksa, Jadran - Galenski laboratorij, Zagreb, 2000.					
	2. Hrvatska ljekarnička komora, Kodeks ljekarničke etike i deontologije, 1996.					
	3. International Pharmaceutical Federation, FIP Statement of Professional Standards Code of Ethics for Pharmacists, 2004. Dostupno na: http://www.fip.org/ .					
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Diploma Thesis					
Code	FARDR	Year of study	5.				
Course teacher		Credits (ECTS)	7.0				
Associate teachers		Type of instruction (number of hours)	L	S	E	T	
				15	60	0	
Status of the course	Mandatory	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	The objective of the course is the preparation of a Diploma thesis under the supervision of a mentor.						
Course enrolment requirements and entry competences required for the course							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Search and critically evaluate relevant data sources from the field of pharmacy and related disciplines.* 2. With the expert guidance of the mentor, define the problem and subject of research, set up a hypothesis and plan the course of research in the field of pharmacy and related disciplines.* 3. Select appropriate literature in order to theoretically address the given problem from the field of pharmacy and related disciplines.* 4. Apply methods and technologies for the purpose of solving a given problem in the field of pharmacy and related disciplines.* 5. Statistically process, display and interpret research results in an appropriate manner.* 6. Communicate and disseminate research results and conclusions drawn.* <p>*LO from set of LO Diploma Thesis</p>						
Course content broken down in detail by weekly class schedule (syllabus)	Depending on the chosen topic and in agreement with the mentor, students conduct research and prepare a written Diploma thesis, which they defend orally in front of a committee.						
Format of instruction	<input type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input checked="" type="checkbox"/> work with mentor <input checked="" type="checkbox"/> consultations			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is	Class attendance		Research	2.0	Practical training		
	Experimental work	2.0	Report		(Other)		
	Essay		Seminar essay	1.0	(Other)		
	Tests		Oral exam	2.0	(Other)		

<i>equal to the ECTS value of the course)</i>	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	The quality of the student's achievement and Diploma thesis is monitored by the mentor. The Diploma thesis and presentation will be evaluated by the committee.					
Required literature (available in the library and via other media)	Title			Number of copies in the library		Availability via other media
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Professional Traineeship				
Code	FARSO	Year of study	5.			
Course teacher	Prof. Darko Modun	Credits (ECTS)	30.0			
Associate teachers	Mentors - pharmacists	Type of instruction (number of hours)	L	S	E	F
			0	0	0	940
Status of the course	Mandatory	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ol style="list-style-type: none"> To acquire professional knowledge and develop skills through structured and guided experiential learning in a real work environment, while achieving independence in professional and administrative work in pharmacies. To acquire all necessary pharmacy competencies according to the Croatian pharmacy competence framework - pharmaceutical care, public health, organizational and managerial competences, as well as personal and professional competences. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> To actively participate in the public health campaign. * To advise the population on health care, disease prevention, healthy lifestyle and safe and rational use of medicines and medical and other products. * To promote the importance of vaccination. * To evaluate medicines and medical products with respect to their effectiveness and safety, and according to the principles of evidence-based pharmacy/medicine. # To dispense medicines and medical and other products with verification of correctness and the legality of the prescription and the individual approach to the patient to whom the drug/product is prescribed and intended to. # To consult the patient with the aim of meeting his therapeutic needs. # To ensure the safe use of drugs while determining and resolving therapeutic problems and the detection and prevention of medication errors. # To carry out the procedure for reporting suspected adverse effects. # To carry out pharmaceutical care within self-medication and dispensing nutritional supplements and cosmetic products. # To produce extemporaneous and galenic preparations in accordance with professional principles, literature, and guidelines. § To establish the conditions for making and storing extemporaneous and galenic preparations. § To correctly label extemporaneous and galenic preparations. § To explain the organizational hierarchy, roles, and responsibilities of each business stakeholder involved in pharmacy operations. § To explain the reimbursement procedures for prescription drugs, medical products, non-prescription drugs, and drugs that are issued to patients with European health insurance card. § To explain the invoicing of different types of prescriptions and medical aid certificates for different categories of insured persons. § To handle compulsory professional documentation in the pharmacy. § To explain the planning procedure for securing supplies of medicines, food supplements, and medical and cosmetic products. § 					

	<p>18. To explain the procedures for ordering, receiving, and replacing medicines, food supplements, and medical and cosmetic products. §</p> <p>19. To explain the procedure of interventional import of medicines. §</p> <p>20. To suggest procedures in the case of technical (computer hardware and software), administrative (non-delivered goods, inappropriate receipts, documentation, etc.), and other possible problems, either independently or as part of the team. §</p> <p>21. To apply disposal procedures for medical and pharmaceutical waste. §</p> <p>22. To demonstrate and develop communication skills in communicating with patients, colleagues, and mentor. &</p> <p>23. To assess own knowledge and skills and the need for learning and expertise development. &</p> <p>24. To plan activities that will meet the established needs for learning and further personal development. &</p> <p>25. To document professional development activities in the portfolio. &</p> <p>26. To enforce legal and regulatory practices in the pharmacy. &</p> <p>27. To act in accordance with the Code of Ethics and Deontology and Good Pharmacy practices. &</p> <p>*LO from set of LO Professional Traineeship - public health # LO from set of LO Professional Traineeship - pharmacy care § LO from set of LO Professional Traineeship - preparation of extemporaneous and galenical preparations § LO from set of LO Professional Traineeship - work organization and pharmacy business & LO from set of LO Professional Traineeship - personal and professional competence development</p>
<p>Course content broken down in detail by weekly class schedule (syllabus)</p>	<p><u>Field teaching (by weeks)</u></p> <p>COMMUNITY PHARMACY Week 1</p> <p>Students - getting to know:</p> <ul style="list-style-type: none"> • assessment methods (competency framework) and tasks (in general), i.e. student training program • work organization and organization of pharmacy activities (premises and equipment of the pharmacy, organization of work in a pharmacy, duties and responsibilities of pharmacists as health professionals), standards and SOPs. • work organizations within the pharmacy, pharmacy/institution hierarchies, staff, and communications within the pharmacy/institution • imposed conditions regarding the pharmacist's appearance (clothing, name tag...) • mandatory professional literature, books, and manuals in the pharmacy and other sources of information (evidence-based pharmacy) + information from HALMED • professional documentation • expiration date checks • with the rules for the disposal of pharmaceutical waste <p>Students - assignments:</p> <ul style="list-style-type: none"> • Study supplements available in the pharmacy - make a classification (list products according to indications) • Study the cosmetics available in the pharmacy - make a classification (list the products according to indications) <p>COMMUNITY PHARMACY Week 2</p> <p>Students - getting to know:</p> <ul style="list-style-type: none"> • products that can be dispensed in a pharmacy • system of ordering and receiving finished medicines, medical products, medicinal substances, and other products sold in pharmacies

- the way of storing medicines and medicinal substances (drugs, volatile and flammable substances, poisons, chemical substances, medicines that are kept at certain temperatures...), and merchandising • handling dangerous drugs

Students - assignments:

- Study nutritional supplements available in the pharmacy - make a classification (list products according to indications)
- Study the cosmetics available in the pharmacy - make a classification (list the products according to indications)

COMMUNITY PHARMACY Week 3

Students - getting to know:

- drug classifications (R, BR, and BRX)
- documentation, i.e. conditions* for the dispensing of medicines and record books related to the same
- the role of the Master of Pharmacy as a consultant (refers to a short consultation when dispensing medicine and individual consultation)
- creating receipts, returns, and keeping the necessary records (total turnover, drugs...), making warehouse certificates
- price calculations
- inventory monitoring (defects, seasonal assortment...)

Students - assignments:

- Choose a specific indication and prepare a short presentation on preparations for self-medication (indication, dosage, side effects, contraindications, restrictions on application, interaction...), special warnings, comparison of similar and/or related preparations of different manufacturers
- Study the ISKRA guidelines for sore throat, allergy, chronic rhinitis, atopic dermatitis

COMMUNITY PHARMACY Week 4

Students - getting to know:

- regulations related to the issuance of prescription drugs by the Health Insurance Authority (basic, supplementary, protection on work, EU insurance) and the issuance of aid for remittances
- regulations related to the dispensing of medicines on private prescription
- checks of prescriptions/remittances – administrative part
- checks of prescriptions/remittances – professional part
- consulting obligations with dispensing
- methods of processing the prescription/remittance
- taxiing and invoicing
- records in the pharmacy (like books, copies of prescriptions, drugs...)
- intervention import procedure

Students - assignments:

- Choose a specific indication and prepare a short presentation on preparations for self-medication (indication, dosage, side effects, contraindications, restrictions on application, interaction...), special warnings, and comparison of similar and/or related preparations of different manufacturers. Mandatory OTC analgesics in pain therapy.

- At the end of the month, fill out the Self-Assessment Form

COMMUNITY PHARMACY Week 5

Students - getting to know:

- participation in patient counselling under the supervision of a mentor
- exercises on the correct use of medicines (inhalers, eye drops...)

- reporting of adverse effects (medicine, medicinal product, dietary supplements), reporting of observed occurrences of incorrect quality of the medicine to the competent authority
- familiarization with pharmacotherapeutic groups of drugs, pharmaceutical equivalents, pharmaceutical alternatives, their pharmaceutical forms
- getting to know treatment guidelines (emphasis on chronic diseases-diabetes, hypertension, asthma...)
- detection and prevention of adverse effects
- detection, assessment, and prevention of clinically significant drug interactions with medicines, medical and other products and food
- dose calculations (children, kidney and liver patients, pregnant women, elderly population)

Students - assignments:

- Study the instructions for wound dressings, diapers, and pads...
- Examples with dose calculations
- Fill in the adverse effect reporting form
- Process one less demanding case per week (example from the recipe) – mentor obliged to help with case selection -> Form 1

COMMUNITY PHARMACY Week 6

Students - getting to know:

- instructions on the proper use of medical products (and orthopaedic aids) which are most often issued in pharmacies (glucometers, blood pressure monitors, devices for cholesterol, headgear for wounds, inhalers, etc.)
- familiarization with pharmacotherapeutic groups of drugs, pharmaceutical equivalents, pharmaceutical alternatives, their pharmaceutical forms
- getting to know treatment guidelines (emphasis on chronic diseases-diabetes, hypertension, asthma...)
- detection and prevention of side effects
- detection, assessment, and prevention of clinically significant drug interactions with medicines, medical and other products, and food
- dose calculations (children, kidney and liver patients, pregnant women, elderly population)

Students - assignments:

- Study the instructions for wound dressings, diapers, and pads...
- Examples with dose calculations
- Fill in the side effect reporting form
- Process one less demanding case per week (example from the recipe) – mentor obliged to help with case selection -> Form 1

COMMUNITY PHARMACY Week 7

Students - getting to know:

- production of all forms of extemporaneous preparations (dosage and compatibility control of changed substances as well as justification of applied combinations, confirmation of identity medicinal substances, selection of containers, signing, taxing according to the pharmaceutical tax and dispensing of prepared preparations
- keeping a laboratory diary
- production and dispensing of medicines containing strong and very strong substances
- familiarization with pharmacotherapeutic groups of drugs, pharmaceutical equivalents, pharmaceutical alternatives, their pharmaceutical forms
- getting to know treatment guidelines (emphasis on chronic diseases-diabetes, hypertension, asthma...)

- detection and prevention of adverse effects
 - detection, assessment and prevention of clinically significant drug interactions with medicines, medical and other products and food
 - dose calculations (children, kidney and liver patients, pregnant women, elderly population)
- Students - assignments:
- Study the instructions for wound dressings, diapers and pads...
 - Examples with dose calculations
 - Fill in the side effect reporting form
 - Process one less demanding case per week (example from the recipe) – mentor obliged to help with case selection -> Form 1
- COMMUNITY PHARMACY Week 8
- Students - getting to know:
- Application of what was learned during the first 7 weeks under the supervision of a mentor
 - manufacturing and dispensing of medicines, medical and other products
 - receipt of goods and introduction of receipts
 - invoicing
 - familiarization with pharmacotherapeutic groups of drugs, pharmaceutical equivalents, pharmaceutical alternatives, their pharmaceutical forms
 - getting to know treatment guidelines (emphasis on chronic diseases-diabetes, hypertension, asthma...)
 - detection and prevention of adverse effects
 - detection, assessment and prevention of clinically significant drug interactions with medicines, medical and other products and food
 - dose calculations (children, kidney and liver patients, pregnant women, elderly population)
- Students - assignments:
- Study the instructions for wound dressings, diapers and pads...
 - Examples with dose calculations
 - Fill in the side effect reporting form
 - Process one less demanding case per week (example from the recipe) - mentor obliged to help with case selection -> Form 1
 - At the end of the month, fill out the Self-Assessment Form
- COMMUNITY PHARMACY Week 9 - 12
- Students - getting to know:
- Application of what was learned during the first 8 weeks in the pharmacy under the supervision of a mentor
 - manufacturing and dispensing of medicines, medical and other products
 - receipt of goods and introduction of receipts
 - invoicing
- Students - assignments:
- Once per week to process one less demanding case (example from the recipe) – mentor obliged to help with case selection -> Form 1
 - At the end of the month, fill out the Self-Assessment Form
- COMMUNITY PHARMACY Week 13 - 16
- Students - getting to know:
- Application of what was learned during the first 12 weeks under the supervision of a mentor:
 - production and dispensing of medicines, medical and other products
 - receipt of goods and introduction of receipts

• invoicing ...

Students - assignments:

- Once per day to process one less demanding case (example from a prescription) – mentor obliged to help with case selection -> Form 1
- Once per week to process a complex case - creating a patient profile -> Form 2
- At the end of the month, fill out the Self-Assessment Form

COMMUNITY PHARMACY Week 17 - 20

Students - getting to know:

- Application of what was learned during the first 16 weeks under the supervision of a mentor:
 - manufacturing and dispensing of medicines, medical and other products
 - receipt of goods and introduction of receipts
 - invoicing...
- information on obtaining approval for independent work, mandatory professional development
- information on the role of the Croatian Pharmaceutical Chamber, Croatian Pharmaceutical Society, HALMED

Students - assignments:

- Once per day to process one less demanding case (example from a prescription) – mentor obliged to help with case selection -> Form 1
- Once per week to process a complex case - creating a patient profile -> Form 2
- At the end of the month, fill out the Self-Assessment Form

HOSPITAL PHARMACY Week 21

Students - getting to know:

- space and equipment and work organization in the hospital pharmacy
- roles of the hospital Master of Pharmacy
- pharmacotherapeutic groups of drugs that are most often or exclusively used in hospital treatment, their pharmaceutical forms, medicinal substances, bandages and laboratory material
- methods of preservation and storage in the hospital pharmacy
- ordering medicines
- dispensing upon request of hospital departments
- maintaining prescribed record books
- keeping a laboratory diary
- getting to know the administrative tasks related to the operations of the hospital pharmacy
- production of all forms of extemporaneous and galenic preparations according to pharmacopeia regulations or other recognized and valid regulations for the needs of the hospital, including production of preparations by aseptic process or sterilization, and production of solutions for infusion if produced by pharmacists.

Students - assignments:

- Once per day to process one less demanding case (example from a prescription) – mentor obliged to help with case selection -> Form 1
- Once per week to process a complex case - creating a patient profile -> Form 2

GALENIC LABORATORY Week 22

Students - getting to know:

- guideline of Good Manufacturing Practice
- space and organization of work in the galenic laboratory in accordance with the applicable law and legal regulations
- accessories, apparatus, and work techniques for drug formulation
- selection of containers for produced preparations

- keeping, storing, and dispensing produced preparations
 - preparation of purified water and water for injections
 - methods of determining validity periods
 - production of all forms of galenic preparations according to the regulations of the pharmacopoeia or others valid regulations
 - maintaining production documentation according to the scope of work
- Students - assignments:
- Real examples of extemporaneous and galenic preparations and counseling related to these preparations (doses, correct application, side effects, storage, warnings...)
- GALENIC LABORATORY Week 23
- Students - getting to know:
- getting to know the administrative tasks of the galenic laboratory, utilizing literature about pharmaceutical technology
 - production of all forms of galenic preparations according to the regulations of the pharmacopoeia or other current regulations, keeping production documentation according to the scope of work
- Students - assignments:
- Real examples of extemporaneous and galenic preparations and counseling related to these preparations (doses, correct application, side effects, storage, warnings...)
- ANALYTICAL LABORATORY Week 24
- Students - getting to know:
- guideline of Good Laboratory Practice,
 - organization of work, accessories and equipment and records in the analytical laboratory of the pharmacy
 - pharmacopeial methods used in drug quality control, and the significance and application of comparative substances in drug analysis
 - production, storage, and handling of reagents, indicators and volumetric solutions
 - identity confirmation and quality control of medicinal substances, as well as galenic quality control preparations, keeping records of test samples and performed analyses accordingly to valid regulations
 - storage of samples and counter samples
- Students - assignments:
- Comparison of general monographs of medicinal forms between different pharmacopoeias and professional regulations - min. 10 monographs
 - Choosing an application and prepare a short presentation on the general principle (definition, sensitivity, specificity and selectivity, importance of testing, types of samples)
- ANALYTICAL LABORATORY Week 25
- Students - getting to know:
- checking professional literature in the field of drug analysis
 - familiarization with the accompanying documentation of medicinal substances (certificates)
 - familiarization with the disposal of chemicals used for the analysis of the chemicals created by the analysis process
 - getting to know the method of determining the validity period from an analytical point of view
 - production, storage and handling of reagents, indicators, and volumetric solutions

	<ul style="list-style-type: none"> • identity confirmation and quality control of medicinal substances, as well as galenic quality control preparations, keeping records of test samples and performed analyzes accordingly to valid regulations • storage of samples and counter samples <p>Students - assignments:</p> <ul style="list-style-type: none"> • Comparison of general monographs of medicinal forms between different pharmacopoeias and professional regulations - minimum 10 monographs • Choosing an examination and prepare a short presentation on the general principle (definition, sensitivity, specificity and selectivity, importance of testing, types of samples) • At the end of the month, fill out the Self-Assessment Form. 					
Format of instruction	<input type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input checked="" type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input checked="" type="checkbox"/> practical work in a pharmacy			
Student responsibilities	Completed practical work in a pharmacy under the supervision of the assigned mentor-pharmacist, and preparation of the Portfolio that includes all the student's activities during the professional traineeship (filled forms, reported adverse effects...)					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training	20.0
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	10.0	Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>To successfully pass the Professional traineeship, students have to regularly attend fieldwork, actively participate in practical work in the pharmacy and create their portfolio. Verification of acquired competencies by the student is continuously carried out under the supervision of a mentor - pharmacist during 6 months of the professional traineeship.</p> <p>Mentor - pharmacist confirms with his signature in the Mentor's Report that the student has acquired the competencies of Master of Pharmacy by the end of the course.</p> <p>The course Professional traineeship is completed after passing six tests:</p> <ol style="list-style-type: none"> 1. Regulations and operations in the pharmacy (after the 1st month), 2. Pharmacy care 1 (after the 2nd month), 3. Hospital pharmacy (after the 3rd month), 4. Pharmacy care 2 (after the 4th month), 5. Analytical and galenic laboratory (after the 5th month), 6. Pharmacy care 3, implemented as OSCE, (after the 6th month). 					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Registar lijekova u Hrvatskoj				10	
	Hrvatska farmakopeja, 2007, vol. 1.					Online
	European Pharmacopoeia, 10th Edition				10	

	Bukić J, Rušić D, urednici. Priručnik za stručno osposobljavanje – STUDENTI. Split: Sveučilište u Splitu; 2020.	100	
	Bukić J, Rušić D, urednici. OBRASCI za stručno osposobljavanje. Split: Sveučilište u Splitu; 2020.	100	
Optional literature (at the time of submission of study programme proposal)	Other necessary professional literature is available to students in pharmacies		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Safety in the Laboratory				
Code	FARIZ1	Year of study	1.			
Course teacher	Asoc. Prof. Damir Barbir	Credits (ECTS)	2.0			
Associate teachers	-	Type of instruction (number of hours)	L	S	E	F
			16		9	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ul style="list-style-type: none"> - Knowledge about the potential hazards working in the lab - The basics of working in a safe manner, safeguards and protective devices and agents at work 					
Course enrolment requirements and entry competences required for the course	ž					
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Apply the rules of behavior and work in the chemical laboratory. 2. Identify basic hazards in the chemical laboratory. 3. Recognize the ways of labeling substances, the meaning of chemical cards (data on physico-chemical, physiological and toxicological properties of substances). 4. Independently interpret and compile chemical cards. 5. Assess the potential dangers of certain chemicals and working with equipment, as well as methods of protection at work. 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures:</p> <p>1st and 2nd hours: introductory lecture, legal regulations, rules of behavior in the laboratory, safety devices in the chemical laboratory</p> <p>3rd and 4th hours: safety and physicochemical properties of substances, classification of substances according to similar properties and functional groups</p> <p>5th and 6th hour: labeling of substances - label, graphic symbols, danger diamond, labels</p> <p>during transport, the effect of harmful substances on health - basic concepts of toxicology and</p> <p>physiological properties of substances, MDK, LD50</p> <p>7th and 8th hours: chemical cards of harmful and dangerous substances,</p> <p>9th and 10th hours: effects of harmful substances on health - division and properties of substances according to</p> <p>physiological properties</p> <p>11 and 12 hours: burning processes and fire danger, devices and facilities for extinguishing fires</p> <p>13. and 14. hours: types of harmful atmosphere and devices for respiratory protection, protection against electric current</p> <p>15th and 16th hours: dangerous products - origin, classification according to UN numbers,</p> <p>storage, recovery and waste</p> <p>Laboratory exercises:</p> <p>Exercise 1. Stability of alkali metals</p> <p>Exercise 2. Material flammability test</p> <p>Exercise 3. Determining the basic physical and chemical properties of solutions with the aim of assessing potential danger</p>					

Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training	
	Experimental work	0.5	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	0.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Continuous evaluation: The overall pass the examination after the lecture (cycle courses) through a written exam. Pass rate threshold is 60%. Rating written exam participates with 90% in the overall assessment. The presence of lectures in 80 -100% amount is 10% of the grade. Final evaluation: Students who did not pass the written exam after the derived classes lay the whole subject matter in the regular examination periods. Prague passing is 60% and a written examination form part of the assessment with the 90%. Rating: sufficient (60-70%), good (71-80%), very good (81-90%), excellent (91-100%).					
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media		
	P. Dabić, Sigurnost pri radu, Autorizirana predavanja za preddiplomski studij, 2013.		1	Web site KTF		
	R. H. Hill, D.C. Finster, Laboratory Safety for Chemistry Students, John Wiley & Sons, Hoboken, New Jersey, 2016.		10			
Optional literature (at the time of submission of study programme proposal)	B. Uhlík, Zaštita od požarno opasnih, toksičnih i reaktivnih tvari (I-IV), Hrvatsko društvo kemijskih inženjera, Zagreb, 1998., 2000., 2003. i 2013. Zakon o zaštiti na radu, Zavod za istraživanje i razvoj sigurnosti, Zagreb, 2010.					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Social Pharmacy				
Code	FARIZ2	Year of study	1			
Course teacher	Prof. Darko Modun	Credits (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			10	15	0	0
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ol style="list-style-type: none"> To introduce the terms like health, illness, prevention, pharmaceutical care, and the role of health care (especially pharmacy and medicines) in the society. To understand the role of pharmacists and pharmacist's activity in patients' safety and treatment outcomes, focusing on the ethics and legislation To distinguish the social profile of a patient, and to understand the specific, more vulnerable group of patients, with the specific approach they require To introduce the activities of national and international pharmaceutical organizations, regulatory bodies and Ministries. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> Define and describe the role of pharmacists and pharmacist's activity in the society Name and distinguish specific, more vulnerable group of patients Describe the activity of Croatian Pharmaceutical Society, Croatian Pharmaceutical Chamber, Croatian Agency for Medicines and Medical Products, Croatian Fund for Health Insurance, World Health Organization, International Pharmaceutica Federation. Name the components of the social profile of a patient, with examples Define health, illness, prevention, therapy Describe the basic characteristics and levels of collaborative practice in the healthcare system 					
Course content broken down in detail by weekly class schedule (syllabus)	Lectures (10 student hours)		No. of hours			
	<ol style="list-style-type: none"> The role of apothecaries/pharmacists in the society. The role of medications in the society. Pharmacy focused on individuals, groups and society. Pharmacists' responsibilities. The educational and informational role of the pharmacist. The pharmacists as an advisor to patients and other consumers of drugs. The relationships of pharmacists with other health professions. Collaborative practice. 					
	Seminars (15 student hours)		No. of hours			
	<ol style="list-style-type: none"> Health and illness, epidemics, pandemics. Disease prevention. Health requirements of different social and age groups. Expansion of the pharmacist's role Drug dependence and addiction (abuse). Pharmacoepidemiology. Problems arising from the use of drugs. Models of the communication relationship between the pharmacist and the patient. 					
	<input checked="" type="checkbox"/> lectures		<input checked="" type="checkbox"/> independent assignments			

Format of instruction	<input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written test with 30 questions, 51% is threshold for passing the exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	K. Taylor i G. Harding (ed.). Pharmacy Practice, Taylor & Francis, London, 2001.					
	G. Harding, S. Nettleton, K. Taylor. Sociology for Pharmacists - An Introduction, The Macmillan Press, London, 1993.					
	R.M. Veatch, A. Hadad. Case Studies in Pharmacy Ethics, 2nd ed., Oxford University Press, New York, 2008.					
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Pharmaceutical marketing					
Code	FARIZ3	Year of study	1.				
Course teacher	Ante Mihanović, PhD, lecturer	Credits (ECTS)	2.0				
Associate teachers		Type of instruction (number of hours)	L	S	E	F	
			5	10	10		
Status of the course	Elective	Percentage of application of e-learning					
COURSE DESCRIPTION							
Course objectives	Understanding the concept, role and meaning of marketing in society and in organizations with an emphasis on the pharmaceutical industry. Developing the ability to understand and analyzing the different market situations they may encounter in business. Adoption of marketing knowledge and techniques important in solving practical problems related to market operations. Acquisition of knowledge essential for understanding the specifics of the business and the impact on the pharmaceutical industry and for the pharmacy role.						
Course enrolment requirements and entry competences required for the course							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain the concepts of marketing and communication in the pharmaceutical industry 2. Analyze different market situations in business 3. Understand the specifics of marketing in the pharmaceutical industry 4. Understand the role of pharmacists in pharmaceutical marketing 						
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures (5 student hours)</u>		Number of hours:				
	1. Introductory lecture - pharmaceutical marketing, regulations		5				
	<u>Seminars (10 student hours)</u>		Number of hours:				
1. Pharmacies and the pharmacy's role in marketing		5					
2. Research of possibilities and analysis of market opportunities		5					
<u>Exercises (10 student hours)</u>		Number of hours:					
1. Trends in the pharmaceutical industry		5					
2. Elements of the communication process and promotion management		5					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (name the proportion of ECTS credits for each activity so that the total number of	Class attendance		Research		Practical training		
	Experimental work		Report		(Other)		
	Essay		Seminar essay		(Other)		

<i>ECTS credits is equal to the ECTS value of the course)</i>	Tests		Oral exam		(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam						
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	P. Kotler et al, Os nove marketinga, MATE, Zagreb 2006.					
	C. M. Smith Pharmaceutical Marketing: Principles, Environment, and Practice, Haworth Press Inc., 2002.					
Optional literature (at the time of submission of study programme proposal)	Lecture materials					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Biomedical curiosities				
Code	FARIZ4	Year of study	1			
Course teacher	Prof. Janoš Terzić	Credits (ECTS)	2.0			
Associate teachers	Asoc. Prof. Jelena Korać Prlić	Type of instruction (number of hours)	L	S	E	F
	Prof. Ivana Marinović Terzić		15	10		
Prof. Ivana Novak Nakir						
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Stimulate students' interest in gaining insight into important biomedical discoveries and thus encourage their engagement in science. Through descriptions of many discoveries, students will put themselves in the circumstances of an invention and stimulate the way of thinking used to recognize and solve biomedical problems.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Get to know the historical circumstances of many biomedical discoveries. 2. Learn how scientists have solved medical mysteries. 3. To grasp the key knowledge that led to the discovery. 4. Independently presented the logic of a certain medical discovery or invention. 					
Course content broken down in detail by weekly class schedule (syllabus)	LECTURES					
	<p>Lecture 1 (3 hours) – Who stole the insulin? Anyone interested in the immune system of bacteria? A story about pain and the development of painkillers and anesthesia. (The discovery of insulin, genetic engineering and CRISPR, as well as analgesics and anesthesia will be described).</p> <p>Lecture 2 (3 hours) – A drug that cures cancer (as pencillin cures a sore throat). Aging. Infectious diseases and drugs against them (The discovery of the anti-CTLA4 drug and antibiotics and the status of aging research will be described).</p> <p>Lecture 3 (3 hours) – Prions. Is cancer contagious? Poisons and their clinical application (The discovery of prions and the discovery of the first anticancer drugs will be described).</p> <p>Lecture 4 (3 hours) – Nobel Prize. Discovering the secret of life (The history of the establishment of the Nobel Prize and presentation of the interesting Nobel laureates K. Mullis and F. Sanger, as well as the discovery of cells) will be presented.</p> <p>Lecture 5 (3 hours) – How to turn skin into brain? How to gift your skin to someone. Try it on yourself. (The discovery of induced pluripotent stem cells and the mechanisms that control transplantation will be presented. The discovery of the link between H. Pylori and gastric ulcer will be described).</p>					
	SEMINARS					
	<p>Seminar 1 - The discovery of: the first microorganisms and bacteria, the use of the first dyes as antibacterial drugs, the discovery of the hepatitis B virus and the thalidomide tragedy will be described.</p> <p>Seminar 2 – The discovery of: heart catheters, hormone-dependent tumors, nitric oxide, the cancer drug - cisplatin, and the discovery of angiogenesis factors will be presented.</p>					

	Seminar 3 - Discovery of aspirin, proto-oncogenes and tumor suppressor genes (p53), discovery of stem cells and ECG. Seminar 4 - Discovery of a way to connect blood vessels, discovery of the effect of NO on the endothelium, discovery of the harmful effect of cholesterol, discovery of heparin.					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0.4	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay	0.6	Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam and essay contribute to the final grade.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Waller J. Fabulous science. Fact and fiction in the history of scientific discovery. Oxford University Press, Oxford, 2002.				1	
	Story of Science. Power, Proof and Passion. Presented by Michael Mosley, BBC. 2010.					Internet
	Cell. Presented by Adam Rutherford. BBC, 2010.					Internet
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Dietetics				
Code	FARIZ5	Year of study	2			
Course teacher	Prof. Tea Bilušić	Credits (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			20	5	0	0
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<ul style="list-style-type: none"> - To understand the general roles of food, the definition of the terms nutrients, non-nutrients, antinutrients - To know the role and dietary sources of macro- and micronutrients - To know the principle of basic nutrition - To understand the application of the methods for determination of dietary assessment - To know to calculate caloric value of meals and RDA for macro and micronutrients - To understand the preventive role of food for various chronic diseases such as diabetes type 2, coronary diseases, obesity, cancers... - To understand the role of dietary fibres and biologically active compounds for body health balance - To know common allergens from food 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Define the basic role of food 2. To define the terms such as nutrients, non-nutrients, and antinutrients 3. To select the factors for determination of the nutritive status 4. To define and understand eating disorders 5. To understand the mechanism of the influence of food components on the body 6. To understand the role of nutrition in prevention of chronic diseases such as obesity, diabetes type 2, coronary diseases 7. To define and understand the role of epigenetic factors from food 8. To define and understand the role of food allergens 					
Course content broken down in detail by weekly class schedule (syllabus)	<ol style="list-style-type: none"> 1. Introduction to the course, definition and significance of food as an environmental factor, definition of terms such as nutrient, non-nutrient, anti-nutrient 1 hour 2. macronutrients in food (proteins, carbohydrates, fats) - importance, sources, deficient states - 3 hours 3. micronutrients in food (minerals, vitamins) - importance, sources, deficit 2 hours 4. determining the body's energy needs for 1 hour 5. determining the degree of nutrition of the organism for 1 hour 6. principles of proper nutrition 1 hour 7. Food components as epigenetic modulators 2 hours 8. Eating disorders 1 hour 9. Functional food components 2 hours 10. nutrition for certain diseases (obesity, diseases of the circulatory system, type 2 diabetes, malignant diseases) 3 hours 11. food allergens 1 hour 					

	12. reduction diets and the importance of autophagy 2 hours The seminar part of the class will include calculations to determine the energy value of meals and the calculation of daily energy consumption with regard to the type of activity.				
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.				
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance		Research		Practical training
	Experimental work		Report		(Other)
	Essay		Seminar essay		(Other)
	Tests		Oral exam		(Other)
	Written exam	2.0	Project		(Other)
Grading and evaluating student work in class and at the final exam	Standardized written test which consists of 20-25 questions (descriptive and selective). Estimated time for taking the exam is up to 60 minutes. The marks scale if the following: 50-62,5% (pass), 62,5-75 (good), 75-87,5 (very good), > 87,5% (excellent).				
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media
	T. Bilušić. Osnove znanosti o hrani. Peer-review lectures, on-line library KTF (Faculty of Chemistry and Technology in Split), 2013.				yes
	T. Bilušić. Dijetetika. recenzirana predavanja, on-line knjižnica KTFa, 2013.				yes
	Senta, Pucarić-Cvetković, Doko-Jelinić: Kvantitativni modeli namirnica i obroka. Medicinska naklada, 2014.			1	
	G.Krešić. Trendovi u prehrani. FHMU, Opatija, 2012.			1	
Optional literature	Straubinger, Fensl, Karre: Fontana mladosti. 2019. Verbanac, D. Prehrana tijekom bolesti. 2016.				
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation				
Other (as the proposer wishes to add)					

NAME OF THE COURSE		Basics of Bioinorganic Chemistry				
Code	FARIZ6	Year of study	2			
Course teacher	Asst. Prof. Nives Vladislavić, Asst. Prof. Ivana Škugor Rončević	Cred3,0its (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			15	10		
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	1. Enabling understanding of the basic ideas of bioinorganic chemistry by comparing the role, structure and actual reactivity of inorganic elements in organisms 2. Understanding the role of metals in biological molecules. 3. Encouraging students to independently and interactively through various sources such as the Internet, articles and books, get acquainted with the structure of biomolecules, find information about their metabolism and interactions in the body.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Distinguish essential from non-essential elements, describe basic ones 2. Describe the coordination complex, explain how the metal ion forms the complex; mode of coordination and stability of the complex depending on the type and shape of the ligand 3. Describe the molecular and chemical properties of oxygen and its importance in human organism 4. Explain the biological function of metals in the human body 5. Explain the biological functions of non-metals in the human body 6. Distinguish toxic from non-toxic metals and explain their impact on humans.					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures:</u> 1. Introductory lecture, curriculum, literature, grading, Distribution of elements 2. Periodic table of elements, review and role of metals in biological systems, essential and non-essential elements 3. Distribution and biological availability of inorganic elements, Division, roles and properties of elements 4. Bioinorganic chemistry of essentially important toxic metals, Biological functions of non-metallic inorganic elements 5. Coordination properties of metals, Biological ligands for metal ions, Concept of central atom 6. Biochemistry of hydrogen, intake, transport and storage of oxygen in organisms 7. The role and transport of alkaline and alkaline earth metal cations as electrolytes 8. Proteins containing iron <u>Seminars:</u> 1. Magnesium and manganese - metals in the center of photosynthesis, The role of zinc in the body; Copper-containing proteins 2. Nickel in the structure of enzymes, Cobalt in biological systems 3. Magnesium and its alloys as orthopedic biomaterials 4. Complex compounds of transition metals: drugs and poisons					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory			

	<input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> work with mentor <input type="checkbox"/> (other)	
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.			
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.5	Research	Practical training
	Experimental work		Report	(Other)
	Essay		Seminar essay	(Other)
	Tests		Oral exam	0.5 (Other)
	Written exam		Project	(Other)
Grading and evaluating student work in class and at the final exam	<p>In the regular examination period, the examination consists of a written part and an oral part of the examination. In order to take the oral part of the exam, the student must first pass the written part of the exam.</p> <p>The written part of the exam lasts 2 hours. The principle of grading the written exam: 55%-69% - sufficient, 70%-79% - good, 80%-89% - very good, 90%-100% - excellent.</p> <p>After the written exam, the results of the exam, the time when students who have not passed the written part of the exam can view the assignments, and the schedule for the oral exam for students who have acquired the right are announced on the bulletin board of the Institute.</p>			
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media
	Wolfgang Kaim, and Brigitte Schwederski. - Chichester Bioinorganic chemistry: inorganic elements in the chemistry of life : an introduction and guide / John Wiley & Sons, cop. 1994.		1	
	Wolfgang Kaim; Brigitte Schwederski; Axel Klein. Bioinorganic chemistry: inorganic elements in the chemistry of life: an introduction and guide / 2nd ed. Wiesbaden: Wiley, cop. 2013.		6	
	Filipović, I., Lipanović, S., Opća i anorganska kemija I dio, Školska knjiga, Zagreb, 1995		30	
Optional literature (at the time of submission of study programme proposal)	<ol style="list-style-type: none"> J.J.R. Frausto da Silva, R.J.P. Williams, The biological chemistry of the elements: the inorganic chemistry of life, Oxford University Press, Oxford, 2001. Bertini, H. B. Gray, S. J. Lippard, J. S. Valentine: Bioinorganic chemistry, University Science Books, Sausalito, CA, 1994. 			
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 			
Other (as the proposer wishes to add)				

NAME OF THE COURSE		Oxidative Stress and Antioxidant Defense					
Code	FARIZ7	Year of study	2				
Course teacher	Prof. Olivera Politeo	Credits (ECTS)	2.0				
Associate teachers		Type of instruction (number of hours)	L	S	E	F	
			10	15	0	0	
Status of the course	Elective	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	Acquaintance of students with oxidation and antioxidation processes of a living organism; the importance of endogenous antioxidant defense system, the importance of exogenous using of antioxidants and the importance of the Mediterranean lifestyle.						
Course enrolment requirements and entry competences required for the course	-						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain the importance of oxidation processes in living organisms. 2. Explain the importance of antioxidant processes. 3. Recognize pathological conditions that are associated with oxidative stress. 4. List and describe the endogenous antioxidant systems of the organism. 5. List and describe the importance of exogenous antioxidants. 6. Explain the importance of the Mediterranean diet and the Mediterranean lifestyle in terms of disease prevention. 						
Course content broken down in detail by weekly class schedule (syllabus)	<p>LECTURES: Oxygen and aerobes. Oxygen toxicity in aerobes. (1) Free radicals. ROS/RNS. (1) Oxidative stress. (1) Antioxidants in health and disease (cardiovascular diseases, diabetes, cancer, neurodegenerative diseases, autoimmune diseases, ...) (2) Antioxidant defense of the organism. (2) Oxidation and food. Substances with antioxidant activity (polyphenols, phenolic acids, carotenoids, lipoic acid, selenium, ..) (2) Mediterranean food and drinks - source of antioxidants of natural origin (1)</p> <p>SEMINARS: By studying of scientific literature, students will be informed with the latest knowledge in the field of this topic.</p>						
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is	Class attendance	0.4	Research		Practical training		
	Experimental work		Report		(Other)		
	Essay		Seminar essay	1.0	(Other)		
	Tests		Oral exam	0.1	(Other)		

<i>equal to the ECTS value of the course)</i>	Written exam	0.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Students receive a grade for the prepared and presented seminar paper. After the class, students write a written exam. The grade will be formed on the following way (Positive test: sufficient: 61-70 %; good: 71-80%; very good: 81-90%; excellent: 91-100%) or relative grading method. After the written exam, the oral part of the exam follows. In case the student is not satisfied with the achieved grade, he can take the written and oral exam again within the new exam period.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	A. Zampelas, R. Micha, Antioxidants in Health and Disease, CRC Press, Taylor & Francis Group, Boca, Raton, London, New York, 2015.					
	B. Halliwell, J. M. C. Gutteridge, Free Radical In Biology and Medicine, 5th Edition, Oxford University Press, Oxford, 2015.					
	J. M. C. Gutteridge, B. Halliwell, Antioxidants in nutrition, health, and disease, Oxford University Press, Oxford, 1994.					
	C. F. Bourgeois, Antioxidant Vitamins and Health, HNB Publishing, New York, 2003					
Optional literature (at the time of submission of study programme proposal)	PowerPoint presentations					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Teratology					
Code	FARIZ8	Year of study	2				
Course teacher	Asoc. Prof. Sandra Kostić	Credits (ECTS)	2.0				
Associate teachers	Prof. Ivana Mudnić, Ana Marija Milat, Ph.D.	Type of instruction (number of hours)	L	S	E	T	
			10	10	5		
Status of the course	Elective	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	Understanding and acquiring knowledge about the influence of drugs on the development of fetal malformations						
Course enrolment requirements and entry competences required for the course	none						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe, analyze and explain basic terms related to fetal development 2. List and explain the components of the placental barrier 3. Identify, analyze and describe developmental anomalies 4. List and explain the factors that influence the development of anomalies 5. Describe the principles of teratology and give historical examples 6. List the drugs that are most often used during pregnancy and lactation 7. Explain the basic terms related to the pharmacokinetics of drugs 8. Explain the influence of the mother's diet, drugs and illegal substances on the development of the fetus 						
Course content broken down in detail by weekly class schedule (syllabus)	<ul style="list-style-type: none"> - Fundamentals of human fetal development 2h (P) - Placenta – blood circulation, placental barrier 2h (S) - Developmental anomalies – genetic, epigenetic and environmental factors 2h (P) - Principles of teratology and historical examples 2h (S) - Medicines during pregnancy and lactation 2h (P) - Pharmacokinetics (absorption, distribution, metabolism, secretion) 2h (S) - Narcotics, non-steroidal anti-inflammatory drugs, anxiolytics and antidepressants, antibiotics, drugs for diseases of the heart and blood vessels, cytostatics, sex hormones, drugs against skin diseases: action and examples of possible disorders caused by their action 2h (P) - Maternal and fetal nutrition 2h (P) - Dietary supplements 2h (S) - Influence of illegal substances on fetal development 2h (S) - Value of teratogen research on animals 2h (V) - Scientific literature search, short films on teratology 3h (V) 						
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (<i>name the</i>	Class attendance		Research		Practical training		

<i>proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Sadler TW. Medical embriology. Zagreb: Školska knjiga.					
	Pereza N, Ostojić S, Zergollern-Čupak Lj, Kapović M, Peterlin B. Clinical dismorphology and developmental anomalies, Medicina 2010, Vol. 46, No. 1, p. 5-18					
Optional literature (at the time of submission of study programme proposal)	Drugs During Pregnancy and Lactation (Third Edition), 2015 Treatment Options and Risk Assessment Edited by:Christof Schaefer, Paul W. J. Peters and Richard K. Miller ISBN: 978-0-12-408078-2					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Physical Biochemistry						
Code	FARIZ9	Year of study			3.			
Course teacher	Prof. Mladen Miloš	Credits (ECTS)			2.0			
Associate teachers		Type of instruction (number of hours)			L	S	E	F
					15	10		
Status of the course	elective	Percentage of application of e-learning			10%			
COURSE DESCRIPTION								
Course objectives	The aim of the course Physical Biochemistry is to connect and fully understand knowledge which students previously acquired by learning the separated courses of Physical Chemistry and Biochemistry.							
Course enrolment requirements and entry competences required for the course	-							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Explain the principles and principles of physical biochemistry. 2. Define (describe) biological molecules and macromolecules. 3. Apply biochemical techniques and experiments. 4. Explain the basic principles of electrochemistry in biochemistry and pharmacy. 5. Explain the basic principles of spectroscopy in biochemistry and pharmacy.							
Course content broken down in detail by weekly class schedule (syllabus)	1. Introduction, Concepts of thermodynamics in biochemistry. 2. Acids, bases and buffers, pH and titration curves of amino acids, peptides and proteins. 3. Application of electrophoretic methods in biochemistry. 4. Thermodynamic terms in biochemistry. Entropy state functions, Gibbs free enthalpy and chemical potential. 5. Dependence of the chemical equilibrium constant on temperature (van't Hoff isochore). 6. Determination of thermodynamic quantities and application of thermodynamics to real biological systems. Chemical potential and properties of solutions. 7. The balance of dissolved ions from different sides of cell membranes depending on the macromolecules present: the Donnan effect. 8. Membrane potential and electrochemical gradient as energy storage. 9. Properties and thermodynamics of real solutions (Debye-Hückel theory). Dependence of the solubility product on the ionic strength of the solution. 10. Electrochemistry and biochemical processes. Calculation of thermodynamic parameters from electrochemical data. Linked oxidation-reduction processes in the mitochondrion. 11. Chemical interactions of ligands and macromolecules. 12. Scatchard diagram and determination of the chemical equilibrium constant and the number of binding sites for ligands on the macromolecule. 13. Thermodynamics of ligand-macromolecule interaction. 14. Kinetics and inhibition of enzymatic reactions. 15. Spectroscopy and spectroscopic methods in biochemistry.							
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input checked="" type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.							
Screening student work (name the proportion of ECTS credits for each activity so that the total number of	Class attendance	1.0	Research		Practical training			
	Experimental work		Report		(Other)			
	Essay		Seminar essay	0.5	(Other)			

<i>ECTS credits is equal to the ECTS value of the course)</i>	Tests		Oral exam		(Other)	
	Written exam	0.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Activity during attendance, presentation of seminar papers in the form of a Power Point presentation and final oral exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Internal script Physical Biochemistry				Web page of Faculty	
	P. Atkins and J. De Paula, Physical chemistry, 8ed, Oxford University Press, Oxford, 2006.			1		
Optional literature (at the time of submission of study programme proposal)	- N. C. Price et al., Principles and problems in Physical chemistry for Biochemists, Third edition, Oxford University Press, Oxford, 2001.					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of passing on exams - Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Sports and Steroids					
Code	FARIZ10	Year of study	3.				
Course teacher	Asoc. Prof. Snježana Mardešić	Credits (ECTS)	2,0				
Associate teachers	Hrvoje Ljubičić, prof. cin. Asoc. Prof. Ivana Mudnić	Type of instruction (number of hours)	L	S	E	F	
			10	10	5		
Status of the course	Elective	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	Understanding and acquiring knowledge about the importance of exercise on overall health and the harm of abuse of prohibited substances.						
Course enrolment requirements and entry competences required for the course	None						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Identify the morphological characteristics of the musculoskeletal system. 2. Describe and define the training process, basics of train planning. 3. Determine individual exercises for target muscle groups. 4. Recognize the positive and negative aspects of supplements as well as prohibited substances.						
Course content broken down in detail by weekly class schedule (syllabus)	Lectures (10h) Basics of myology Muscles under the microscope Supplements Seminars (10h) Steroids The influence of steroids on the histological structure of muscles New research in sports physiology and steroid abuse Exercises (5h) Training process in the gym						
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	2,0	Research		Practical training		
	Experimental work		Report		(Other)		
	Essay		Seminar essay		(Other)		
	Tests		Oral exam		(Other)		
	Written exam		Project		(Other)		

Grading and evaluating student work in class and at the final exam	Essay		
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Anabolic steroids detected in bodybuilding dietary supplements - a significant risk to public health. Abbate V, Kicman AT, Evans-Brown M, McVeigh J, Cowan DA, Wilson C, Coles SJ, Walker CJ. Drug Test Anal. 2015 Jul;7(7):609-18		
Optional literature (at the time of submission of study programme proposal)	Sadler TW. , Langman's Medical Embryology, Lippincott Williams and Wilkins, USA, 2012 Netter FH. Atlas of human anatomy. Basel: Novartis, 1998 Handouts from lectures		
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Molecular Basis of Tumorigenesis				
Code	FARIZ11	Year of study	3.			
Course teacher	Asst. Prof. Jasminka Omerovic	Credits (ECTS)	2.0			
Associate teachers	Prof. Janoš Terzić, Prof. Ivana Marinović Terzić, Prof. Ivana Novak Nakir, Asst. Prof. Jelena Korać Prlić	Type of instruction (number of hours)	L	S	E	T
			15	15		
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>The objectives of the course are:</p> <ol style="list-style-type: none"> 1. Describe the cellular signaling pathways in the cell that control the key biological processes in the cell: growth, proliferation, migration, differentiation and survival. 2. Understand the mechanisms of invasiveness, angiogenesis and metastasis in the context of the development of breast, lung, melanoma, neuroblastoma and other tumors. 4. Understanding the basic principles of the operation and application of personalized therapy. 5. Understanding the mechanisms of de-novo resistance to standard and targeted therapy. 6. Understanding of state-of-the-art methods used for early diagnosis and personalized targeted therapy. 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe cellular signaling pathways in the cell. 2. Explain the causes of uncontrolled cell growth, migration, survival and angiogenesis. 3. List and describe the mechanisms of action of targeted therapy. 4. List the molecular mechanisms of resistance arising during therapy and give examples of such. 5. Describe the state of the art methods used in the diagnosis and treatment of tumors and in monitoring the response to targeted therapy. 					
Course content broken down in detail by weekly class schedule (syllabus)	<ol style="list-style-type: none"> 1. Introduction to cellular signaling (lecture 2 hours) 2. Oncogenic and tumor suppressor genes - definition and role of these genes in the processes of tumor formation and development. Targeted therapy. (lecture 2 hours). 3. Control of the cell cycle - phases of the cell cycle, CDK - cyclin complexes and their regulation, passage of cells through control points. (lecture 2 hours). 4. Targeted therapy (seminar 3 hours). 5. Invasiveness, metastases, angiogenesis, survival in tumor cells. (lecture 2 hours,). 6. Signaling pathways in breast, lung, skin and other tumor cells (seminar 3 hours). 7. De-novo resistances resulting from the application of standard and targeted therapy. Methods and results of a personalized therapy approach in medicine. (lecture 2 hours, seminar 2 hours). 8. State of the art methods in diagnosis, treatment of tumors and monitoring response to therapy. (seminar 2 hours) 9. Analysis of relevant scientific papers (exercises 5 hours) 					

Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	1.0	(Other)	
	Tests		Oral exam		(Other)	
	Written exam		Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	L. Pecorino, Molecular biology of cancer (2012) DeVita et al. Primer of the Molecular Biology of Cancer, LWW (2011)					
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Molecular Research in Medicine				
Code	FARIZ12	Year of study	3.			
Course teacher	Prof. Ivana Marinović Terzić	Credits (ECTS)	2.0			
Associate teachers	Prof. Janoš Terzić, Asst. Prof. Jasminka Omerovic, Prof. Ivana Novak Nakir, Asst. Prof. Jelena Korać Prlić	Type of instruction (number of hours)	L	S	E	T
			8		17	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Students will be introduced to the scientific work in molecular biomedicine, and they will be trained to the level of independent performance of some laboratory techniques. The emphasis of this course is on practical teaching.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> Gain insight into ways of analyzing and manipulating nucleic acids and proteins. Independently plan basic biomedical research in the laboratory. Familiarize yourself with the techniques: mutagenesis and cloning, designing PCR primers, transformation and propagation of bacterial cultures, isolation of genomic and plasmid DNA, demonstration of work with cell cultures, and insertion of the desired gene into cells (transfection), isolation and purification of proteins, study of protein interaction (by immunoprecipitation and GST-pulldown test), Western blot analysis and silver staining. Independently analyze the obtained results. 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Each teaching day will start with 2 hours of lectures, followed by 3 hours of practical work.</p> <p>LECTURES (8):</p> <ol style="list-style-type: none"> From DNA, through RNA to proteins. Plasmids and cloning of recombinant DNA. Genetic manipulation of bacteria and mammalian cells. Determination of protein interactions in vivo and in vitro. Modern techniques of molecular biology. <p>EXERCISES (17):</p> <p>DNA isolation, PCR and cloning. DNA and protein electrophoresis. Protein isolation and purification, GST-pulldown. Western blot, protein staining with silver. Work with cell cultures, transformation and cultivation of bacteria.</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					

Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	0.3	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay	0.7	Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Cooper GM, Hausman RE. Stanica - Molekularni pristup, Medicinska naklada, Zagreb, 2004., hrvatsko izdanje.			20		
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Population Genetics				
Code	FARIZ13	Year of study	3			
Course teacher	Prof. Ozren Polašek	Credits (ECTS)	2.0			
Associate teachers	Prof. Ivana Kolčić	Type of instruction (number of hours)	L	S	E	F
			15	5	5	0
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Familiarize with the main concepts, ideas and principles of population genetics					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain main processes in population genetics, including mutations, selection and evolution, processes that are shaping the populations, mate selection and sex distribution in a population 2. Explain genetic history of human population, the concept of human races, genetic drift and founder effect as the main mechanisms underlying differences among populations 3. Explain the idea of haplogroups and their meaning in medicine 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>1st day The concept of population genetics (P2h; assistant professor Ozren Polašek, PhD) Mutation, selection and evolution (P2h; assistant professor Ozren Polašek, PhD) Evolution of the human species (P1h; assistant professor Ozren Polašek, PhD) Haplogroups and their meaning (P1h; assistant professor Ozren Polašek, PhD)</p> <p>2nd day Open and isolated populations (P2h; Ph.D. Ivana Kolčić) Demography and genetics (P1h; Ph.D. Ivana Kolčić) Genetics of the modern human population (P2h; Dr. Ivana Kolčić) Genetic past and future of humans (P1h; Ivana Kolčić, Ph.D.)</p> <p>3rd day Partner selection (P2h; assistant professor Ozren Polašek, PhD) The future of the use of genomics (P1h; assistant professor Ozren Polašek, PhD) Models of human evolution (S2h; assistant professor Ozren Polašek, PhD) Analysis of ethnic origins (S1h; assistant professor Ozren Polašek, PhD)</p> <p>4th day Migrations (S1h; assistant professor Ozren Polašek, PhD) Genetic structure of the population (V1h; Dr. Ivana Kolčić) Project 10,001 Dalmatians (V2h; Ph.D. Ivana Kolčić) Archaeogenetics (S1h; assistant professor Ozren Polašek, PhD)</p> <p>5th day Project 10,001 Dalmatians (V2h; Ph.D. Ivana Kolčić) Exam</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			

Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0.4	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.6	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Lecture materials					online
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		How to Live to a Hundred?					
Code	FARIZ14	Year of study	3				
Course leader(s)	Asoc. Prof. Ivana Kolčić	Credits (ECTS)	2.0				
Associate teachers	Asst. Prof. Irena Zakarija-Grković	Type of instruction (number of hours)	L	S	E	T	
			15	0	10		
Status of the course	Elective	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	1. To teach students about scientifically based principles of healthy nutrition 2. To acquaint students with the peculiarities of the Mediterranean diet and its effect on health 3. Instruct how to use food for preventive and curative purposes, in order to add years and quality of life to a person's life, ensuring a healthy and functional old age						
Course enrolment requirements and entry competences required for the course							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. To understand the evidence-based principles of healthy eating and healthy foods 2. To critically appraise various 'fad diets' and scientific evidence on nutrition 3. To understand the principles of the Mediterranean diet 4. To understand the possibilities of interaction between food items and medications 5. To apply acquired knowledge in everyday life and pharmaceutical practice						
Course content broken down in detail by weekly class schedule (syllabus)	Topics covered: 1. What is a healthy diet? Why should we talk about nutrition? 2. Breastfeeding: the first step towards healthy nutrition 3. Complementary feeding: What? When? How? 4. The basics of metabolism and metabolic needs: How much protein do we need? Are supplements justified? And other questions 5. The Mediterranean diet: What should we eat? How should we prepare foods? Why should we eat those foods? 6. The role of nutritional antioxidants 7. Healthy eating in a healthy city – a model of the City of Split 8. The role of wild Mediterranean plants in healthy eating 9. Pesticides and other contaminants in food and their impact on health 10. Safe food preparation of food in the prevention of infectious diseases 11. The role of food in the prevention of chronic non-communicable diseases 12. 2016-2025: United Nations Decade of Action on Nutrition 13. Food and medications – possible interactions						
Format of instruction	<input type="checkbox"/> x lectures <input type="checkbox"/> seminars and workshops <input type="checkbox"/> x exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> x independent assignments <input type="checkbox"/> x multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (name the proportion of ECTS credits for each)	Class attendance	0.5	Research		Practical training		
	Experimental work		Report		(Other)		

<i>activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Cochrane Library systematic reviews					
	How Not to Die? Dr. Michael Greger					
	Website and guidelines by the World Health Organization					
Optional literature (at the time of submission of study programme proposal)	YouTube documentaries about nutrition					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		How to Make Your Own Organ?				
Code	FARIZ15	Year of study	3.			
Course teacher	Asst. Prof. Sandra Kostić	Credits (ECTS)	2.0			
Associate teachers	Nela Kelam, mag.educ.biol et chem.	Type of instruction (number of hours)	L	S	E	T
			10	10	5	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Understanding and acquiring knowledge about bioengineering procedures and the production of regenerative biological materials					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Name and describe the main fields of biotechnology. 2. Describe the main characteristics of medical biotechnology, and name the examples within this field. 3. Explain the process of tissue engineering in detail; describe the main principle of choosing the components required for constructing an organ. 4. Identify and explain the positive and negative sides of using stem cells in tissue engineering 5. - Describe the ethical concerns involved in construction of artificial organs 					
Course content broken down in detail by weekly class schedule (syllabus)	<ul style="list-style-type: none"> - Introduction to biotechnology 2h (P) - Introduction to tissue engineering 2h (P) - Basic principle of tissue engineering – selection of cells, carriers, bioreactors 2h (P) - Tissue and organ bioengineering as an alternative to drugs, gene therapy and organ transplantation 2h (P) - Production of specific organs (tissues) 2h (P) - Possibilities of using cell cultures for the production of tissues and organs 4h (S) - Regenerative medicine - application of stem cells 2h (S) - The most important achievements in the field of bioengineering of artificial organs and their therapeutic potential 4h (S) - Production of specific organs (tissues): skin, cartilage, bones, heart, lungs, urinary bladder, sexual organs... (5 h V) 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance		Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	2.0	Project		(Other)	

Grading and evaluating student work in class and at the final exam			
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Moran EC, Dhal A, Vyas D, Lanas A, Soker S, Baptista PM. Whole-organ bioengineering: current tales of modern alchemy. <i>Transl Res.</i> 2014; 163(4):259-67.		online
	Vacanti J. Tissue engineering and regenerative medicine: from first principles to state of the art. <i>J. Pediatr. Surg.</i> 2010;45(2):291–294.		online
	Atala A. Regenerative medicine strategies. <i>J. Paediat. Surg.</i> 2012; 47:17–28.		online
	Scarritt ME, Pashos NC, Bunnell BA. A review of cellularization strategies for tissue engineering of whole organs. <i>Front Bioeng Biotechnol.</i> 2015;3:43		online
Optional literature (at the time of submission of study programme proposal)	Meyer U, Meyer TH, Handschel J, Wiesmann HP (2009) <i>Fundamentals of Tissue Engineering and Regenerative Medicine</i> , Springer, New York.		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Packaging of Pharmaceutical Products				
Code	FARIZ16	Year of study	3.			
Course teacher	Prof. Nataša Stipanelov Vrandečić	Credits (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			20	5		
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Aim of the course is to represent the materials for pharmaceutical packaging described by European and Croatian Pharmacopoeia, as well as their application for production of items for medical and surgical usage. Also, the aim of the course is to acquaint students with the possible interactions of pharmaceutical products with pharmaceutical packaging materials.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Define the main functions of pharmaceutical products packaging 2. Identify the characteristics of different kind of pharmaceutical products and its sensitivity on external influences 3. Describe and identify various materials for pharmaceutical products packaging 4. Identify the interactions in pharmaceutical product - packaging system 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>1. Introduction:</p> <ul style="list-style-type: none"> - development and characteristics of the packaging of pharmaceutical products - packaging of prescription and non-prescription drugs <p>2. Functions of packaging of pharmaceutical products.</p> <ul style="list-style-type: none"> - protective function: protection from light, from effects of gases and vapour, from loss of volatile components, from contamination - storage and transport function - utilitarian, sales and ecological function <p>3. Types and characteristics of pharmaceutical products, appearance of pharmaceutical products</p> <p>4. The process of packaging pharmaceutical products: Preparation of packaging for packing, measuring and filling, sealing of packaging. Modern labelling methods.</p> <p>6. Types and characteristics of materials for packaging pharmaceutical products.</p> <p>7. Glass, types of glass for glass containers for pharmaceutical purposes (bottles and ampoules).</p> <p>8. Metallic material (aluminium, steel, tin), protective coatings for metal containers, aluminium foils, tubes, metal closures.</p> <p>9. Polymeric materials for pharmaceutical packaging, additives for polymeric materials.</p> <ul style="list-style-type: none"> - Properties and pharmaceutical suitability of polymeric materials. - Polyolefins: polyethylene for containers for parenteral and ophthalmic preparations; polypropylene for containers and closures for parenteral and ophthalmic preparations. - Poly(vinyl chloride) based materials, plasticized and unplasticized poly(vinyl chloride), poly(ethylene/vinyl acetate), polystyrene, silicone elastomers, rubber (sealing material for aqueous parenteral preparations, powders and lyophilized powders), biodegradable polymers - Polyesters: polycarbonate, poly(ethylene terephthalate) for containers not intended for parenteral use. - Multilayer materials for containers of pharmaceutical products. 					

	<p>10. Forms of pharmaceutical packaging: bottles, ampoules, pouches, boxes, tubes, plastic bottles. Modern packaging methods for pharmaceutical products: Blister and strip packaging for tablets and dragees.</p> <p>11. Interactions of glass, metal and plastic containers with pharmaceutical products: permeation, migration and adsorption processes.</p> <p>Seminar and exercises Identification and analysis of pharmaceutical packaging</p>				
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.				
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training
	Experimental work		Report		(Other)
	Essay		Seminar essay		(Other)
	Tests		Oral exam		(Other)
	Written exam	2.0	Project		(Other)
Grading and evaluating student work in class and at the final exam	<p>The verification of the acquired knowledge is done by a written test after attended lectures. For a passing grade, the student must score at least 60%.</p> <p>Grades: 60-70% - sufficient (2); 71-80% - good (3); 81-90% - very good (4); 91-100% - excellent (5).</p>				
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media
	<i>Hrvatska farmakopeja 2007 s komentarima</i> , HFD, Zagreb, 2007.			1	
	<i>European Pharmacopeia</i> , Fifth edition, Vol. 1, EDQM, Strasbourg, 2005.			1	
	N. Stipanelov Vrandečić, <i>Ambalaža farmaceutskih proizvoda</i> , neregistrirani nastavni materijali, 2021.				x
Optional literature (at the time of submission of study programme proposal)	<p>F.A. Paine, H. Lockhart, <i>Packaging Pharmaceutical and Healthcare Products</i>, Blackie Academic & Professional, Glasgow, 1996.</p> <p>A. Kaushik, B. Chaurasia, V. Dhakar, <i>Textbook of Pharmaceutical Packaging Technology</i>, CBS Publishers & Distributors PVT.LTD., New Delhi, 2015.</p>				
Quality assurance methods that ensure the acquisition of exit competences	<p>-Analysis of student evaluation of teaching work and teaching quality</p> <p>-Analysis of exam passing</p> <p>-Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee</p> <p>-External evaluation</p>				
Other (as the proposer wishes to add)					

NAME OF THE COURSE		Kinetic Methods of Analysis of Pharmaceutical Preparations				
Code	FARIZ17	Year of study	3.			
Course teacher	Asoc. Prof. Lea Kukoč Modun	Credits (ECTS)	2.0			
Associate teachers	Asst. Prof. Franko Burčul, Maja Biočić, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			15	5	10	
Status of the course	Elective	Percentage of application of e-learning	10 %			
COURSE DESCRIPTION						
Course objectives	The aim of this course is to introduce students to the theoretical aspects, practical work and applications of kinetic methods of analysis of active compounds in pharmaceutical formulations. The choice of kinetic measuring system will depend on the knowledge of the basic principles of used instrumentation and the understanding of their advantages and limitations in analytical application. Also, accepted knowledge and skills in this course provide competence for development of analytical methods and analysis of active compounds in pharmaceutical formulations					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Interpret the adopted theoretical knowledge relating to selected flow methods and principles of flow systems. 2. Integrate acquired knowledge and apply them in problem-solving and decision-making in analytical practice and in development of kinetic methods of analysis. 3. Interpret basic theoretical knowledge for selected enzyme kinetic models 4. Select appropriate enzyme system depending on analyte 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures</p> <ol style="list-style-type: none"> 1. Kinetic methods of analysis, theoretical part. 2. Instrumentation for kinetic measurements. 3. Flow-Injection Analysis, FIA 4. Sequential injection analysis, SIA. 5. Third generation of FIA system, lab-on-valve , LOV. Design and optimization of LOV system. 6. Advantages of kinetic methods of analysis, economic and ecological aspects (green chemistry). 7. Enzymes - theoretical basis 8. Enzyme kinetics - theoretical basis 9. Enzyme kinetic models 10. Instrumental systems used for enzyme reaction tracking <p>Seminars</p> <ol style="list-style-type: none"> 1. Determination of active compounds in pharmaceutical formulations using kinetic methods of analysis. 2. Determination of active compounds in pharmaceutical formulations using flow-injection analysis. 3. Determination of active compounds in pharmaceutical formulations using sequential injection analysis. 					

	4. Continuous and stopped flow and stopped reaction techniques 5. Enzyme systems "on-chip" Experimental work: 1. Determination of acetylcysteine in pharmaceutical formulations using kinetic method of analysis 2. Determination of ascorbic acid in pharmaceutical formulations using flow injection analysis 3. Determination of penicillamine in pharmaceutical formulations using sequential injection analysis 4. Spectrophotometric determination of cholinesterases inhibitors 5. Glucose determination using glucose oxidase enzyme "on-chip"				
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)		
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.				
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance		Research		Practical training
	Experimental work	0.5	Report		(Other)
	Essay		Seminar essay		(Other)
	Tests		Oral exam	0.5	(Other)
	Written exam	1.0	Project		(Other)
Grading and evaluating student work in class and at the final exam	Written exam and oral exam.				
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media
	Radić, Njegomir; Kukoč Modun, Lea, Uvod u analitičku kemiju, Školska knjiga 2016., Zagreb			30	
	Radić, Njegomir; Kukoč Modun, Lea. Kinetic Methods of Analysis with Potentiometric and Spectrophotometric Detectors – Our Laboratory Experiences // Analytical Chemistry / Ira S. Krull (ur.). Rijeka : InTech, 2012. Str. 73-92.				web
Optional literature (at the time of submission of study programme proposal)	1. J. Ružička and E.H. Hansen, Flow injection analysis, second edition, John Wiley & Sons, 1988. 2. B. Kariberg and G. E. Pacey, Flow injection analysis, A practical guide, Elsevier, 1989. 3. M. Trojanowicz, Flow injection analysis, Instrumentation and Applications, World Scientific Publishing Co., London 2000. 4. M. Trojanowicz, Advances in Flow Analysis, Wiley-VCH, New York, 2008.				

	<ol style="list-style-type: none"> 5. J. Martinez Calatayud, Flow Injection Analysis of Pharmaceuticals (Automation in the laboratory), Taylor & Francis, London, 2003. 6. R. Kellner, J. M. Mermet, M. Otto, M. Valcarcel and H. M. Widmer (Editors), Analytical Chemistry, Second Edition, Wiley-VCH, New York, 2004. 7. D. Harvey, Modern Analytical Chemistry, McGraw-Hill Higher Education, New York, London, 2000. 8. A. Cornish-Bowden, Fundamentals of Enzyme kinetics, Wiley-Blackwell, 2012., Weinheim, Germany 9. A. Mulchandani, K. Rogers; Enzyme and Microbial Biosensors: Techniques and Protocols, Humana Press, Totowa, New Jersey, 1998. 10. M. Stoytcheva, R. Zlatev; Nanotechnology and Nanomaterials: Lab-on-a-Chip Fabrication and Application, InTech, 2016.
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation
Other (as the proposer wishes to add)	

NAME OF THE COURSE		Biotechnological Processes of the Pharmaceutical Industry				
Code	FARIZ18	Year of study	4			
Course teacher	Asst. Prof. Sanja Perinović Jozić	Credits (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	F
			15		10	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	Gaining of basic theoretical knowledge in biotechnology as well as the role and application of microorganisms and enzymes in industry related to pharmacy.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Explain the term biotechnology 2. Differentiate the primary and secondary cell metabolism and its application in biotechnology 3. Explain of microbe cell growth diagram 4. Explain the advantages of isolated enzymes in biotechnology 5. Describe the techniques of cell disruption to obtain intracellular products 6. Explain the alcoholic fermentation 7. Outline some examples of biotechnological processes (synthesis of antibiotics and vitamins as well as the anti-cancer drugs) 					
Course content broken down in detail by weekly class schedule (syllabus)	<p><u>Lectures</u></p> <ol style="list-style-type: none"> 1. Introduction to biotechnological processes. Development of biotechnology. Biochemistry and biotechnologyBiotechnological production process. Basic scheme of biotechnological process. Raw materials for the substrates. (2 hours) Substrates for microbial processes. Substrates for animal and plant cell cultures. Substrate preparation. Sterilization of substrate, air and equipment. (2 hours) Oxygen role in biotechnological processes. Classification of biotechnological processes. Microbial biotechnological processes. (2 hours) Enzyme biotechnological processes. Biotechnological processes of cell culture. Kinetics in bioreactors. Microbial kinetics. (2 hours) Immobilized biocatalysts. Downstream processing operations. (2 hours) Isolation and purification of biomass products. Biotechnological production of ethanol. Biotechnological production of lactic acid. Biotechnological production of citric acid. Biotechnological production of L-glutamic acid. (2 hours) Biotechnological production of antibiotics - penicillin. Biotechnological production of vitamin B₂. Biotechnological production of vitamin B₁₂. Biotechnological production of provitamin A (β-carotene and astaxanthin). (2 hours) Biotechnological production of taxol. Biosensors. (1 hour) <p>Laboratory exercises:</p> <ol style="list-style-type: none"> 1. Fermentation of <i>Saccharomyces Cerevisiae</i> 2. Immobilization of baker's yeast on alginate 3. Immobilization of lactase on alginate 					
	<input checked="" type="checkbox"/> lectures	<input type="checkbox"/> independent assignments				

Format of instruction	<input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0.5	Research		Practical training	0.2
	Experimental work	0.5	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests	0.3	Oral exam	0.2	(Other)	
	Written exam	0.3	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The complete exam can be passed through two tests during semester. The passing score is 60 % and the fraction of each test is 35%. In the final grade laboratory exercises has fraction of 30%. In the exam period the student has to attend to written and oral exam (passing score is 60%). Written exam is 35% and oral exam is 35%. Grades: sufficient (60% – 70%), good (71% – 80%), very good (81% – 90%), excellent (91% – 100%).					
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media		
	V. Marić, B. Šantek, Biokemijsko inženjerstvo, Golden-Marketing-Tehnička knjiga, Zagreb, 2009.		1			
	C. Ratlege, B. Kristiansen, Eds. Basic Biotechnology, Cambridge University Press, Cambridge, 2006.		1			
	V. Marić, Biotehnologija i sirovine, Stručna i poslovna knjiga d.o.o., Zagreb, 2000.		1			
	J. E. Smith, Biotechnology, Cambridge University Press, Cambridge, 2000.		1			
Optional literature (at the time of submission of study programme proposal)	R. D. Schmid, Pocket Guide to Biotechnology and Genetic Engineering, Wiley-VCH, Weinheim, 2003.					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Research and Development of Medicines				
Code	FARIZ19	Year of study	4.			
Course teacher	Prof. Siniša Tomić	Credits (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	T
			15	10		
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	1. Gaining knowledge of the general principles of new drug discovery through all phases of drug development 2. Gaining knowledge about the functioning of the pharmaceutical industry, innovative and generic, and about their strategic determinants 3. Acquiring skills in communication related to pharmaceutical marketing and drug promotion					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Describe and explain the stages of drug development 2. List and explain the methods used in drug research 3. State and explain the strategic determinants of the innovative and generic pharmaceutical industry 4. State and explain the basic principles of drug advertising 5. Analyze the drug market 6. Calculate and determine the reference price of the medicine 7. Create a marketing plan for an OTC drug 8. Differentiate terms important for communication in drug marketing 9. Present and apply regulatory information about the drug in ethical marketing					
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures</u> 1. Innovative and generic drugs, synthetic and biological drugs (2 h) 2. Finding molecular and physiological targets as sites of action of future drugs, information from the human genome sequence, bottlenecks in drug research (2 h) 3. Rational design of medicines (2 h) 4. The process of finding a drug that corresponds to the desired goal: high-throughput screening (HTS), "Hit-to-Lead" strategy (2 h) 5. Optimizing the lead connection (Lead) (2 h) 6. Intellectual property protection and patent (2 h) 7. Non-clinical drug tests (2 h) 8. Counterfeit medicines (1 h) <u>Seminars</u> 1. Price of the medicine (2 hours) 2. List of medicines (2 h) 3. Ethical marketing (2 h) 4. Advertising of medicines (1 h) 5. Communication skills in pharmaceutical marketing (1 h) 6. Market analysis (1 h) 7. Development of a marketing plan for an OTC drug (1 h)					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety		<input type="checkbox"/> independent assignments <input checked="" type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor			

	<input checked="" type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input checked="" type="checkbox"/> Homework			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0.5	Research		Practical training	
	Experimental work		Report		Homework	0.5
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Final written exam.					
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media
	Zakon o lijekovima					Yes
	Pravilnik o oglašavanju lijekova					Yes
Optional literature (at the time of submission of study programme proposal)	Shayne Cox Gad (2005), Drug Discovery Handbook, Wiley-Interscience Madsen U. (2002), Textbook of Drug Design and discovery, CRC					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Tribunal Pharmacy				
Code	FARIZ20	Year of study	4.			
Course teacher	Prof. Davorka Sutlović	Credits (ECTS)	2.0			
Associate teachers	Prof. Marija Definis-Gojanović	Type of instruction (number of hours)	L	S	E	F
			10	10	5	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>Training students to:</p> <ol style="list-style-type: none"> 1. Gaining knowledge for understanding the basic concepts and principles in toxicology, understanding the principles of entrance of toxic substances in human bodies, as well as identifying types of toxic substances 2. Acquisition of knowledge for identification of toxic substances that can endanger human health 3. Acquiring knowledge about the most common acute poisoning and poisoning with lethal outcome, the liability for the occurrence, treatment and prevention 4. Gaining knowledge about a new psychoactive substances, production and distribution. 5. Gaining knowledge for detection of toxic substances in biological materials 6. Acquisition of knowledge about the directives and laws in Republic of Croatia and the European Union in handling hazardous chemicals 					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe the basic terms in the field of forensic toxicology, 2. Recognize the types of toxic substances that can cause chemical accidents and disasters. 3. Prevent the possibility of endangering safety when handling different chemical substances. 4. Know how to distinguish the results of analyzes and select those that can be interpreted in court. 5. Evaluate according to analytical data the justification of drug therapy in addicts. 6. Calculate the concentration of alcohol in the blood for the purposes of court cases. 					
Course content broken down in detail by weekly class schedule (syllabus)	Course type	Teaching unit			Hours	
	L1	Introduction to forensic pharmacy / Types of poisoning			2	
	L2	Hazardous substances and national security			2	
	L3	Drugs and addictive substances in the workplace			2	
	L4	New psychoactive substances: production, chemical characteristics and distribution, NPS detection			4	
	S1	Driving under influence			3	
	S2	Court expertise			3	
	S3	Types of expertise with examples from practice			4	
E	Autopsy and taking samples in fatal poisoning			5		

Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0,3	Research	0,3	(Other)	
	Experimental work		Report		(Other)	
	Essay		Seminar essay	0,4	(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Testing types		Efficacy (score)		Proportion in the evaluation (%)	
	The presence and activity during lectures and seminars- 100 % presence		10		15	
	Seminar- presentation		15		15	
	Written exam		40		40	
	Oral exam		35		35	
	Total		100		100	
	The success and grade ratio					
	The achieved percentage (%)		Criteria		Grade	
	60-70		Minimal criteria		2	
	71-80		Average success		3	
81-90		Above-average success		4		
91-100		Extraordinary success		5		
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media		
	1. Sutlović D., i sur., Osnove forenzične toksikologije		0	https://webknjizara.hr/		
2. Kovačić, Zdravko; Nestić, Marina; Sutlović, Davorka. Forenzična toksikologija // Sudska medicina i deontologija / Mayer, Davor (ur.). Zagreb: Medicinska naklada, 2018. str. 153-201						
Optional literature	Joel Levy, Otrovi – ilustrirana povijest. Prijevod / Irena Žuntar. Zagreb: Školska knjiga, 2020.					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Oncological Pharmacy				
Code	FARIZ21	Year of study	4.			
Course teacher	Prof. Eduard Vrdoljak	Credits (ECTS)	2.0			
Associate teachers	Asst. Prof. Tomislav Omrčen	Type of instruction (number of hours)	L	S	E	F
	Asst. Prof. Marijo Boban Asst. Prof. Branka Petrić Miše Asst. Prof. Tihana Boraska Jelavić Asst. Prof. Marija Ban Asst. Prof. Lidija Bošković		10	7	8	0
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	<p>Acquisition of knowledge and skills in the field of oncology which deals with systemic therapy (chemotherapy, immunotherapy, hormonal therapy, gene therapy, anti-angiogenic therapy, anti-metastatic therapy) of malignant tumors. This includes the knowledge of the indications and mechanisms of action of antineoplastic drugs, their therapeutic and harmful effects, as well as multimodal forms of treatment in oncology.</p> <p>Acquisition of knowledge of basic oncology, oncogenesis, tumor biology, metastasis process.</p> <p>Acquisition of knowledge of basic etiology and tumor epidemiology, and TNM classification.</p> <p>Acquisition of knowledge and skills in the implementation of primary, secondary and tertiary oncological prevention.</p> <p>Acquisition of knowledge of basic treatment modalities such as surgical oncology, radiotherapy, hypothermic and photodynamic therapy, as well as supportive-symptomatic treatment.</p> <p>Acquisition of knowledge of the role of a pharmacist in the wider treatment of oncologic patients, in the process of clinical research studies and in the development of oncological drugs, and of pharmacoeconomics in oncological treatment.</p> <p>Acquisition of knowledge and skills about the process of preparation, ordination, storage and optimal disposal of oncologic drugs and the process of destruction of oncological materials.</p>					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> Describe and explain the mechanism of action of chemotherapy, immunotherapy, hormone therapy, gene therapy, anti-angiogenic therapy and anti-metastatic therapy Describe the oncogenesis, tumor transformation and process of metastasis List the indication of a particular therapy for the treatment of malignant tumors. List, describe and explain the adverse effects of systemic oncologic therapy 					

	<ol style="list-style-type: none"> 5. Distinguish and interpret measures of primary, secondary and tertiary prevention of malignant tumors 6. Plan the process of preparation, ordination and optimal disposal of oncologic drugs (oncologic waste disposal) 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Lectures:</p> <ol style="list-style-type: none"> 1. Introduction to oncology for pharmacists 2. Basics of systemic oncological treatment 3. Cytostatics: basic principles of chemotherapy, types of chemotherapy, mechanism of action of cytostatics 4. Small-molecule therapy, immunotherapy 5. Other forms of oncological treatment (radiotherapy, hormonal therapy, anti-angiogenic therapy, photodynamic therapy, hyperthermia, gene therapy) 6. Lung cancer 7. Colon cancer 8. Breast cancer 9. Prostate cancer 10. Kidney cancer <p>Seminars:</p> <ol style="list-style-type: none"> 1. Preparation, storage and disposal of cytostatics 2. Supportive treatment (antiemetics, treatment of anorexia and cachexia) 3. Supportive treatment (analgesics, bisphosphonates) 4. Prevention and early diagnosis of tumors 5. Treatment of adverse effects of specific oncologic therapy I (chemotherapy) 6. Treatment of adverse effects of specific oncologic therapy II (small-molecule therapy, immunotherapy) 7. Treatment of adverse effects of specific oncologic therapy III (hormonal therapy, radiotherapy, anti-angiogenic therapy) <p>Practicals: Department of Oncology, 8 hours</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> on line in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam		(Other)	
	Written exam	1.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Requirement for admission to the exam in Oncology Pharmacy is regular attendance to the classes. The Oncology Pharmacy exam is in a written form (test).					

	The test consists of 50 questions. The minimum score for passing the exam is 30 points.		
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Klinička onkologija, Vrdoljak i sur, Medicinska naklada, 3 th edition, 2018.		
Optional literature (at the time of submission of study programme proposal)	Principles and practice of radiation oncology – Perez/Brady, 8 th edition Principles and practice of oncology - de Vita/Hellman/Rosenberg, 11 th edition		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Psychopharmacotherapy					
Code	FARIZ22	Year of study	4.				
Course teacher	Asoc. Prof. Trpimir Glavina	Credits (ECTS)	2.0				
Associate teachers	Asst. Prof. B. Uglešić, Asst. Prof. D. Lasić, Asst. Prof. T. Franić	Type of instruction (number of hours)	L	S	E	T	
			15	10	0	0	
Status of the course	Elective	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	Obtaining broader knowledge about the specifics of psychopharmacotherapy in various psychiatric disorders and entities.						
Course enrolment requirements and entry competences required for the course							
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Consider the general principles of clinical psychopharmacotherapy 2. Consider the indications for prescribing psychotropic drugs and treatment algorithms, 3. Name the treatment of emergency conditions in psychiatry 4. Evaluate the approach in the case of therapeutically resistant conditions and the peculiarities of the treatment of special groups of patients (pregnant women, nursing mothers, children and adolescents, elderly population).						
Course content broken down in detail by weekly class schedule (syllabus)	<u>Lectures</u> 1. Anxiolytics 2. Antidepressants 3. Antipsychotics 4. Psychostabilizers and other drugs in the treatment of mental disorders 5. Clinical application of psychopharmaceuticals in the treatment of mental disorders <u>Seminars</u> Clinical application of psychopharmaceuticals in the treatment of mental disorders (various topics)						
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)				
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	1.0	Research		Practical training		
	Experimental work		Report		(Other)		
	Essay	0.2	Seminar essay		(Other)		
	Tests		Oral exam		(Other)		
	Written exam	0.8	Project		(Other)		
Grading and evaluating student	Written exam.						

work in class and at the final exam			
Required literature (available in the library and via other media)	Title	Number of copies in the library	Availability via other media
	Pavo Filaković i sur., Psihijatrija, Osijek 2014.		
Optional literature (at the time of submission of study programme proposal)	Pharmacotherapy Handbook, 9/E, Barbara G. Wells		
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 		
Other (as the proposer wishes to add)			

NAME OF THE COURSE		Science for Society				
Code	FARIZ23	Year of study	4.			
Course teacher	Prof. Ana Marušić	Credits (ECTS)	2.0			
Associate teachers	dr. Shelly Pranić, Ivan Buljan, dr. Ružica Tokalić	Type of instruction (number of hours)	L	S	E	F
			15		10	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	To familiarize students with the responsible research and innovation (RRI), which is in the heart of research effort worldwide, including EU research programmes.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Use available tools for research transparency 2. Recognize the building blocks of clinical trial registers 3. Review the roles of biomedical practitioners and researchers in spreading knowledge and responsible application of research results in society 4. Create educational materials about biomedical research for the public 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>Each day will start with 3 hours of lectures, followed by 3 hours of practical work. Each day will be dedicated to important aspects of responsible research and innovation.</p> <p>Day 1 Lecture: Responsible research Practical: Discussion of case studies</p> <p>Day 2 e-Lecture: Responsible innovation Practical: Discussion of case studies</p> <p>Day 3 e-Lecture: Open access Practical: Discussion of case studies</p> <p>Day 4 e-Lecture: Ethics in research Practical: Discussion of case studies</p> <p>Day 5 Lecture: Including public in research, responsible governance of research and innovation Science Café: card game on responsible conduct of research</p>					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> exercises <input checked="" type="checkbox"/> mixed e-learning <input checked="" type="checkbox"/> independent assignments					
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the	Class attendance	0.25	Individual assignments	0.75	Final essay	1,0

<i>proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)</i>			(Course essay)			
Grading and evaluating student work in class and at the final exam	Written test and course assignments					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Marušić M, ur. Principles of Research in Biomedicine and Health. Zagreb: Medicinska naklada; 2015.			5	-	
	RRI tools			-	http://www.rri-tools.eu	
	European Commission. Responsible Research and Innovation. Europe's ability to respond to societal challenges.			-	https://ec.europa.eu/research/swafs/pdf/pub_public_engagement/responsible-research-and-innovation-leaflet_en.pdf	
Optional literature (at the time of submission of study programme proposal)	Office of Research Integrity. General resources. Dostupno na: http://ori.hhs.gov/general-resources-0 .					
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Genes and Pain				
Code	FARIZ24	Year of study	4.			
Course teacher	Asoc. Prof. Sandra Kostić	Credits (ECTS)	2.0			
Associate teachers		Type of instruction (number of hours)	L	S	E	T
			10	10	5	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	The objective of the course is to enable students to understand and adopt basic concepts related to pain and personalized pain treatment based on knowledge from the field of pharmacogenomics.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Describe and explain the basic pain terminology and definitions (e.g. nociception, nociceptors, central and peripheral sensitization, allodynia, hyperalgesia...) 2. Identify and describe the main difference between acute and chronic pain 3. Identify and describe the methods, drugs and different approaches for the pain treatment available to patients today 4. Name and explain the most relevant achievements in the field of pharmacogenomics and their therapeutic potential 5. Name and describe the examples from the scientific literature which point to the link between the gene-environment interaction and our pain tolerance 6. Name and describe specific pain disorders which result from gene mutations, including congenital insensitivity to pain 					
Course content broken down in detail by weekly class schedule (syllabus)	<ul style="list-style-type: none"> - Basic terms related to pain; types of pain, mechanisms of occurrence, difference between acute and chronic pain 3h (P) - Current approaches in treatment (past and present) 3h (P) - Pharmacogenomics – the future of customized pain treatment 2h (P) - Ethical and cultural aspects of pain 2h (P) - The latest interesting things in pain genetics research - from preclinical experiments to the clinic 5h (S) - Painful stimuli and test methods 2h (S) - Examples of the formation of the pain tolerance threshold through the interaction of genes and the environment 3h (S) - Insensitivity to pain as a result of a single gene mutation (examples of patients) and other examples of pain pathology 5h (V) 					
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (name the proportion of ECTS credits for each activity so that the total number of	Class attendance		Research		Practical training	
	Experimental work		Report		(Other)	
	Essay		Seminar essay		(Other)	

<i>ECTS credits is equal to the ECTS value of the course)</i>	Tests		Oral exam		(Other)	
	Written exam	2.0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	The prerequisites for taking the exam are regular class attendance and passing the colloquium (if the student misses a maximum of 20% of the total class, he must make up for these absences orally). The exam is written. The total percentage of correct answers on the exam required for a positive grade is 60%.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	Webster LR, Belfer I. Pharmacogenetics and Personalized Medicine in Pain Management. Clin Lab Med. 2016 Sep;36(3):493-506. doi: 10.1016/j.cll.2016.05.007. Epub 2016 Jun 22.				Yes	
	Ko TM, Wong CS, Wu JY, Chen YT. Pharmacogenomics for personalized pain medicine. Acta Anaesthesiol Taiwan. Mar;54(1):24-30, 2016.				Yes	
	Devor M: How Do Pain Genes Affect Pain Experience? In: Pain Genetics: Basic to Translational Science, First Edition. Editors: Belfer I and Diatchenko L. John Wiley & Sons, Inc., 1-14, 2014.				Yes	
	Meyer K, Kaspar BK. Making Sense of Pain: Are Pluripotent Stem Cell-derived Sensory Neurons a New Tool for Studying Pain Mechanisms? Mol Ther. 2014 Aug;22(8):1403-5.				Yes	
	Mogil JS. Pain genetics: past, present and future. Trends Genet. 2012 Jun;28(6):258-66.				Yes	
	Dib-Hajj SD, Waxman SG. Translational pain research: Lessons from genetics and genomics. Sci Transl Med. 2014 Aug 13;6(249):249sr4.				Yes	
Optional literature (at the time of submission of study programme proposal)						
Quality assurance methods that ensure the acquisition of exit competences	<ul style="list-style-type: none"> -Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation 					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Medically Assisted Fertilization					
Code	FARIZ25	Year of study	4.				
Course teacher	Assoc. Prof. Snježana Mardešić	Credits (ECTS)	2,0				
Associate teachers	Prof. Jelena Marušić	Type of instruction (number of hours)	L	S	E	F	
			10	10	5		
Status of the course	Elective	Percentage of application of e-learning	10%				
COURSE DESCRIPTION							
Course objectives	Understanding and acquiring knowledge about infertility, causes of it and dealing with it.						
Course enrolment requirements and entry competences required for the course	None						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Identify, describe and explain the most important causes of male and female infertility 2. Describe and explain different techniques of assisted fertilization 3. Recognize the positive and negative aspects of assisted fertilization 4. Recognize the psychological aspect of assisted fertilization						
Course content broken down in detail by weekly class schedule (syllabus)	Lectures (10): Anatomy and histology of the genital tract Embryology of the genital tract The "test tube" child throughout history Seminars (10) Causes of male and female infertility Types and techniques of assisted fertilization IVF and age? "Sperm selection": (What can we learn from Mother Nature?) Exercises (5) Chromosomes in humans Work in a lab						
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work			<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (name the proportion of ECTS credits for each activity so that the total number of	Class attendance	1,0	Research		Practical training		
	Experimental work		Report		(Other)		
	Essay		Seminar essay		(Other)		

<i>ECTS credits is equal to the ECTS value of the course)</i>	Tests		Oral exam		(Other)	
	Written exam	1,0	Project		(Other)	
Grading and evaluating student work in class and at the final exam	Written exam.					
Required literature (available in the library and via other media)	Title			Number of copies in the library	Availability via other media	
	<p>Assisted Reproductive Technology National Summary Report, US DEPARTMENT OF HEALTH AND HUMAN SERVICES Centers for Disease Control and Prevention, 2014</p> <p>Tan TY, Lau SK, Loh SF, Tan HH., Female ageing and reproductive outcome in assisted reproduction cycles. Singapore Med J. 2014 Jun;55(6):305-9.</p> <p>Pokulniewicz M, Issat T, Jakimiuk A. In vitro fertilization and age. When old is too old? Prz Menopauzalny. 2015 Mar;14(1):71-3</p> <p>Sharma R , Agarwal A, Rohra VK , Assidi M, Abu-Elmagd M. Turki RF. Effects of increased paternal age on sperm quality, reproductive outcome and associated epigenetic risks to offspring. Reprod Biol Endocrinol. 2015 Apr 19;13:35.</p> <p>Deonandan R. Recent trends in reproductive tourism and international surrogacy: ethical considerations and challenges for policy. Risk Manag Healthc Policy. 2015 Aug 17;8:111-9</p> <p>Saxena P , Mishra A, Malik S. Surrogacy: Ethical and legal issues. Indian J Community Med.2012 Oct;37(4):211-3</p>					
Optional literature (at the time of submission of study programme proposal)	<p>Sadler TW. , Langman's Medical Embryology, Lippincott Williams and Wilkins, USA, 2012</p> <p>Netter FH. Atlas of human anatomy. Basel: Novartis, 1998</p>					
Quality assurance methods that ensure the acquisition of exit competences	<p>-Analysis of student evaluation of teaching work and teaching quality</p> <p>-Analysis of exam passing</p> <p>-Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee</p> <p>-External evaluation</p>					
Other (as the proposer wishes to add)						

NAME OF THE COURSE		Pharmacogenetics				
Code	FARIZ26	Year of study	4.			
Course teacher	Prof. Davorka Sutlović	Credits (ECTS)	2.0			
Associate teachers	Asst. Prof. Sendi Kuret	Type of instruction (number of hours)	L	S	E	F
			10	10	5	
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	1. Acquiring knowledge to understand basic concepts and principles in the field of pharmacogenetics. 2. Acquiring knowledge to recognize pharmacotherapeutically important genetic variations. 3. Gaining knowledge in determining polymorphism. 4. Gaining knowledge in the interpretation of polymorphism results and the influence on drug dosage. 5. Use of relevant databases.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	1. Describe basic concepts from the field of pharmacogenetics. 2. Describe the principles and methods used in pharmacogenetics. 3. Recognize the importance of determining enzyme polymorphism in determining therapy. 4. Master the basic techniques of determining polymorphism. 5. Suggest the dosage of the drug, according to the analytical data of the gene variant.					
Course content broken down in detail by weekly class schedule (syllabus)	Course type	Teaching unit			Hours	
	L1	Introduction to pharmacogenomics / Genetics and pharmacogenetics			2	
	L2	Methods in pharmacogenomics			2	
	L3	Polymorphism of CYP - 450 enzymes			2	
	L4	Techniques for determining polymorphisms			4	
	S1	Interpretation of polymorphism results and drug dosage evaluation			5	
	S2	Warfarin pharmacogenetics / daily dose calculation according to CYP2C9*2*3 and VKORC1 C1173T genotyping results			3	
	S3	Pharmacogenetics of drugs for tumor diseases			2	
	E	Determination and polymorphism of the gene CYP2C9*2*3; CYP2C19*2*3*17; CYP3A4			5	
Format of instruction	<input checked="" type="checkbox"/> lectures <input checked="" type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> independent assignments <input type="checkbox"/> multimedia <input type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			

Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.						
Screening student work (name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)	Class attendance	0.3	Research		Practical training	0.3	
	Experimental work		Report		(Other)		
	Essay		Seminar essay	0.4	(Other)		
	Tests		Oral exam		(Other)		
	Written exam	1.0	Project		(Other)		
Grading and evaluating student work in class and at the final exam	Testing types			Efficacy (score)	Proportion in the evaluation (%)		
	The presence and activity during lectures and seminars- 100 % presence			10	15		
	Seminar- presentation			15	15		
	Written exam			40	40		
	Oral exam			35	35		
	Total			100	100		
	The success and grade ratio						
	The achieved percentage (%)	Criteria			Grade		
	60-70	Minimal criteria			2		
	71-80	Average success			3		
81-90	Above-average success			4			
91-100	Extraordinary success			5			
Required literature (available in the library and via other media)	Title				Number of copies in the library	Availability via other media	
	1. Martin M. Zdanowicz (ur.), Concepts in Pharmacogenomics, American Society of Helath - System Pharmacists, Bethesda, MD, 2010. 2. Russ B. Altman, David Flockhart i David B. Goldstein (ur.), Principles of Pharmacogenetics and Pharmacogenomics, Cambridge University Press, 2012						
	DRUGS AND THE PHARMACEUTICAL SCIENCES A Series of Textbooks and Monographs					online	
Optional literature							
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation						
Other (as the proposer wishes to add)							

NAME OF THE COURSE		Technology of Synthetic Drugs				
Code	FARIZ27	Year of study	4.			
Course teacher	Asst. Prof. Miće Jakić	Credits (ECTS)	2.0			
Associate teachers	Irena Krešić, Ph.D.	Type of instruction (number of hours)	L	S	E	F
			15	-	10	-
Status of the course	Elective	Percentage of application of e-learning	10%			
COURSE DESCRIPTION						
Course objectives	To learn the importance of process of drug production optimization, steps of technological process, examples of industrial drug production.					
Course enrolment requirements and entry competences required for the course						
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	<ol style="list-style-type: none"> 1. Define elements of quality assurance 2. Apply the rules of good manufacturing practice (GMP) 3. Explain the importance of gradually increasing the scale 4. List the basic stages in the technological process of the production of an active substance (API, English Active Pharmaceutical Ingredient) 5. Distinguish between the importance of catalytic and non-catalytic synthesis processes 6. Classify excipients, explain their use in the production of pharmaceutical forms 					
Course content broken down in detail by weekly class schedule (syllabus)	<p>History and development of pharmaceutical industry. Drug development phases. Process scale up. Scale up criteria (reagents, solvents, unit operations, complexity of reaction) (3 hours). Quality assurance elements in drug production. Good manufacturing practice. Sterile drugs production (clean rooms, equipment, sterilization methods of air and products) (3 hours). "Green" chemistry principles. Examples of ibuprofen synthesis. Solvent recovery. Importance of catalysts in drugs production (3 hours). First test (1 hour).</p> <p>Overall technological process with production schemes. Chemical reactors characteristics. The role of synthetic chemistry in the drug discovery. Raw materials for drugs synthesis. Route design and process optimization Principles of separation, crystallization, purification and drying. Flow chart of drug formulation. (3 hours) ASA production – catalytic and non-catalytic route. Reaction by-products and its use. Diazepam production – three different ways of synthesis. Levetiracetam production – classical and novel synthesis. Importance of continuous vs. batch processes. Celecoxib production – batch and continuous process. Azithromycin production by chemical modification of erythromycin. Amphetamine production – reductive amination, nitroalkane addition and nitro group reduction, Leukart synthesis, chiral synthesis. Exemestane production (Pfizer). Radafaxine production – racemate separation using chiral chromatography (2 hours). An example of drug formulation (paracetamol) (1 hour). Second test (1 hour). Laboratory exercises: API synthesis. Recrystallization. Drying. API identification using FT-IR. Purity determination using DSC. Thermogravimetric analysis.</p>					
	<input checked="" type="checkbox"/> lectures		<input type="checkbox"/> independent assignments			

Format of instruction	<input type="checkbox"/> seminars and workshops <input checked="" type="checkbox"/> exercises <input type="checkbox"/> <i>on line</i> in entirety <input type="checkbox"/> partial e-learning <input type="checkbox"/> field work		<input type="checkbox"/> multimedia <input checked="" type="checkbox"/> laboratory <input type="checkbox"/> work with mentor <input type="checkbox"/> (other)			
Student responsibilities	In accordance with the Rulebook on studies and the study system and the Code of Ethics for students of the University of Split School of Medicine.					
Screening student work (<i>name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course</i>)	Class attendance	0.75	Research		Practical training	
	Experimental work	0.25	Report		(Other)	
	Essay		Seminar essay		(Other)	
	Tests		Oral exam	0.5	(Other)	
	Written exam	0.5	Project		(Other)	
Grading and evaluating student work in class and at the final exam	<p>The complete exam can be passed through two tests during semester. The passing score is 60 % and the fraction of each test is 35%. In the final grade laboratory exercises has fraction of 30%. In the exam period the student has to attend to written and oral exam (passing score is 60%). Written exam is 35% and oral exam is 35%.</p> <p>Grades: successful (60% – 70%), good (71% – 80%), very good (81% – 90%), excellent (91% – 100%).</p>					
Required literature (available in the library and via other media)	Title		Number of copies in the library	Availability via other media		
	C. D. S. Johnson, J. J. Li, <i>The art of drug synthesis</i> , Wiley Interscience, New York, 2006.		1			
Optional literature (at the time of submission of study programme proposal)	R. Vardanyan, V. Hruby, <i>Synthesis of essential drugs</i> , Elsevier, New York, 2006. M. Jovanović, Z. Đurić, <i>Osnovi industrijske farmacije</i> , Nijansa, Zemun, 2005					
Quality assurance methods that ensure the acquisition of exit competences	-Analysis of student evaluation of teaching work and teaching quality -Analysis of exam passing -Reports of the Teaching Committee, the Teaching Supervision Committee and the Quality Improvement Committee -External evaluation					
Other (as the proposer wishes to add)						

3. STUDY PERFORMANCE CONDITIONS

3.1. Places of the study performance

Buildings of the constituent part (name existing, under construction and planned buildings)	
Identification of building	USSM Basic science building (BSB), A Building
Location of building	Šoltanska 2, Križine, Split
Year of completion	1976.
Total square area in m ²	4802
Identification of building	USSM Teaching and administration building, B Building
Location of building	Šoltanska 2, Križine, Split
Year of completion	2011.
Total square area in m ²	4700
Identification of building	USSM Hostel for visiting professors and restaurant, C building
Location of building	Šoltanska 2, Križine, Split
Year of completion	2014.
Total square area in m ²	1531
Identification of building	USSM Pathology and anatomy complex (PAK)
Location of building	Spinčićeva 1, Firule, Split
Year of completion	1986.
Total square area in m ²	2800
Identification of building	Faculty of Chemistry and Technology, "three faculties" building
Location of building	Ruđera Boškovića 35, Split
Year of completion	2016.
Total square area in m ²	5058

3.2. List of teachers and associate teachers

Course	Teachers and associate teachers
Analytical Chemistry I	izv. prof. dr. sc. Lea Kukoč Modun
Analytical Chemistry II	izv. prof. dr. sc. Lea Kukoč Modun
Analytics of Medicines	doc. dr. sc. Doris Rušić
Applied Biochemistry	izv. prof. dr. sc. Vedrana Čikeš Čulić
Basics of Bioinorganic Chemistry	doc. dr. sc. Nives Vladislavić
Biochemistry of Medicines	doc. dr. sc. Ana Šešelja Perišin
Biomedical Curiosities	prof. dr. sc. Janoš Terzić
Biopharmacy	doc. dr. sc. Ana Šešelja Perišin
Biotechnolog. Processes of the Pharm. Industry	izv. prof. dr. sc. Sanja Perinović Jozić
Cell Biology	prof. dr. sc. Vesna Boraska Perica
Clinical Laboratory Diagnostics	doc. dr. sc. Leida Tandara
Clinical Pharmacology and Pharmacoeconomics	izv. prof. dr. sc. Ivana Mudnić
Clinical Pharmacy and Pharmacotherapy	doc. dr. sc. Josipa Bukić
Community Pharmacy	prof. dr. sc. Darko Modun
Cosmetology	doc. dr. sc. Dario Leskur
Dietetics	prof. dr. sc. Tea Bilušić
Extemporaneous Preparations	doc. dr. sc. Josipa Bukić
General Biochemistry	prof. dr. sc. Olivera Politeo
General Chemistry with Stoichiometry	doc. dr. sc. Ivana Škugor Rončević
Genes and Pain	izv. prof. dr. sc. Sandra Kostić
How to Live to a Hundred?	prof. dr. sc. Ivana Kolčić
How to Make Your Own Organ?	izv. prof. dr. sc. Sandra Kostić
Human Anatomy and Histology	izv. prof. dr. sc. Sandra Kostić
Immunology and Vaccines	doc. dr. Jasminka Omerović
Instrumental Methods of Analysis in Pharmacy	izv. prof. dr. sc. Lea Kukoč Modun
Introduction to Pharmacy	doc. dr. sc. Doris Rušić
Kinetic Methods of Analysis of Pharm. Preparat.	izv. prof. dr. sc. Lea Kukoč Modun
Mathematics and Biostatistics	doc. dr. sc. Sanja Tipurić-Spužević and prof. dr. sc. Ana Marušić
Medical English	Sonja Koren, prof., lecturer
Medical Genetics	prof. dr. sc. Ivana Novak Nakir
Medically Assisted Fertilization	izv. prof. dr. sc. Snježana Mardešić
Molecular Basis of Tumorigenesis	doc. dr. sc. Jasminka Omerović
Molecular Biology	doc. dr. sc. Jelena Korać Prlić
Molecular Research in Medicine	prof. dr. sc. Ivana Marinović Terzić

Oncological Pharmacy	prof. dr. sc. Eduard Vrdoljak
Operations of Pharmaceutical Technology	prof. dr. sc. Nenad Kuzmanić
Organic Chemistry I	prof. dr. sc. Igor Jerković
Organic Chemistry II	izv. prof. dr. sc. Ani Radonić
Oxidative Stress and Antioxidant Defense	prof. dr. sc. Olivera Politeo
Packaging of Pharmaceutical Products	prof. dr. sc. Nataša Stipanelov Vrandečić
Pathophysiology with the Basics of Pathology	prof. dr. sc. Tina Tičinović Kurir
Pharmaceutical Botany	prof. dr. sc. Valerija Dunkić
Pharmaceutical Care and Self-Medication	doc. dr. sc. Doris Rušić
Pharmaceutical Chemistry I	doc. dr. sc. Dario Leskur
Pharmaceutical Chemistry II	doc. dr. sc. Dario Leskur
Pharmaceutical Ethics and Deontology	prof. dr. sc. Darko Duplančić
Pharmaceutical Formulations	doc. dr. sc. Ana Šešelja Perišin
Pharmaceutical Legislation	doc. dr. sc. Doris Rušić
Pharmaceutical Marketing	dr. sc. Ante Mihanović, predavač
Pharmaceutical Microbiology	prof. dr. sc. Marija Tonkić
Pharmaceutical Nomenclature	prof.dr.sc. Siniša Tomić
Pharmaceutical Toxicology	prof. dr.sc. Davorka Sutlović
Pharmaceuticals	doc. dr. sc. Ana Šešelja Perišin
Pharmacogenetics	prof. dr. sc. Davorka Sutlović
Pharmacognosy	doc. dr. sc. Josipa Bukić and prof. dr. sc. Ani Radonić
Pharmacokinetics	prof. dr. sc. Darko Modun
Pharmacology	prof. dr. sc. Darko Modun
Physical Biochemistry	prof. dr. sc. Mladen Miloš
Physical Chemistry	izv. prof. dr. sc. Renato Tomaš
Physical Education and Sports	Hrvoje Ljubičić, prof., lecturer
Physics for Pharmacists	izv. prof. dr. sc. Marija Raguž
Physiology	prof. dr. sc. Zoran Valić
Phytotherapy	doc. dr. sc. Josipa Bukić
Population Genetics	prof. dr. sc. Ozren Polašek
Production of Pharmaceutical Formulations	doc. dr. sc. Dario Leskur
Professional Practice	prof. dr. sc. Darko Modun
Professional Traineeship	prof. dr. sc. Darko Modun
Psychopharmacotherapy	doc. dr. sc. Trpimir Glavina
Research and Development of Medicines	prof.dr.sc. Siniša Tomić
Safety in the Laboratory	izv. prof. dr. sc. Damir Barbir

Science for Society	prof. dr. sc. Ana Marušić
Scientific Methodology in Pharmacy	prof. dr. sc. Ana Marušić
Sports and Steroids	izv. prof. dr. sc. Snježana Mardešić
Technology of Synthetic Drugs	doc. dr. sc. Miće Jakić
Teratology	izv. prof. dr. sc. Sandra Kostić
Tribunal Pharmacy	prof. dr.sc. Davorka Sutlović

3.3. Curriculum vitae of the course teacher

Title, name and last name of the course leader	Assoc. prof. Damir Barbir, Ph.D.
Title of the course at the proposed study programme	Safety in the Laboratory
GENERAL INFORMATION ON COURSE LEADER	
Address	Ruđera Boškovića 35, 21000 Split
Telephone number	021 329 442
E-mail address	damir.barbir@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/kontakt-3/kontakt-djelatnici/item/barbir-damir
Year of birth	1983.
Scientist ID	307703
CROSBİ profile ID	24301
Research rank and date of the last appointment	Senior research associate, March 02 2021
Research and teaching or teaching rank, and the date of the last appointment	Associate professor, May 24 2021
Area and field of appointment into research rank	Technical Sciences, Chemical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology
Date of employment	February 01 2008
Job title (professor, researcher, associate teacher, etc.)	Professor
Field of research	Solidification and stabilization of waste materials Cement hydration and kinetic analysis Synthesis and application of nanostructured materials
Position in the institution	-
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Ph.D.
Institution	Faculty of Chemistry and Technology
Place	Split
Date	July 03 2013
INFORMATION ON ADDITIONAL TRAINING	
Year	2021.
Place	Rim, Trst (online)
Institution	Elettra - Sincrotrone Trieste
Field of training	1st on-line School on Synchrotron Radiation "Gilberto Vlaic": Fundamentals, Methods and Applications
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it	Safety at work - Undergraduate study of chemical technology (majors: Chemical engineering and environmental protection), Undergraduate study of food

is/was held, and level of study programme)	technology, Professional study of protection and recovery of materials
Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	2014 - professional training "Development and improvement of pedagogical competences of university teachers" at the Faculty of Philosophy, University of Split
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Professor Tea Bilušić
Title of the course at the proposed study programme	Dietetics
GENERAL INFORMATION ON COURSE LEADER	
Address	Ruđera Boškovića 35
Telephone number	+385 21 329 466
E-mail address	tea@ktf-split.hr
Personal web page	
Year of birth	1973
Scientist ID	238765
CROSBİ profile ID	21656
Research rank and date of the last appointment	Scientific advisor, July 2012
Research and teaching or teaching rank, and the date of the last appointment	Full professor, permanent position, May 2013
Area and field of appointment into research rank	Biotechnical sciences, food technology
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology
Date of employment	1/01/2002
Job title (professor, researcher, associate teacher, etc.)	Professor
Field of research	Food Science, Food Chemistry
Position in the institution	Full professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of Food Science and Technology University of Zagreb
Place	Zagreb
Date	14/06/2004
INFORMATION ON ADDITIONAL TRAINING	
Year	2000.-2001. 2002.-2003. 2006.-2008. 2016. 2017.
Place	1. Paris, France 2. Fribourg, Switzerland 3. Freising, Germany 4. Regensburg, Germany 5. Barcelona, Spain 6. Barcelona, Spain 7. Novi Sad, Serbia
Institution	1. INRA, Institute for agronomic sciences 2. Faculty of Science, University of Fribourg 3. Faculty of Science, Chair of Food Biofunctionality, Technical University of München (TUM) 4. Faculty of Chemistry, University of Regensburg 5. Faculty of Pharmacy, University of Barcelona 6. Faculty of Chemistry, University of Barcelona 7. Faculty of Technology, University of Novi Sad
Field of training	1. Probiotics from yogurth 2. Molecular biology techniques in plant transformations 3. Plant-derived bioactive compounds 4. NMR technique

	<ol style="list-style-type: none"> 5. Biologically active compounds from plant-derived food 6. Biologically active compounds and their activity 7. The use of microemulsions for stabilization of biologically active compounds
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<ol style="list-style-type: none"> 1. Food and nutrition, undergraduate study of Food technology (2007-today) 2. Mediterranean diet, graduate study of Food technology (2012- today) 3. Dietetics, study of Pharmacy (2010-today) 4. Elderly nutrition, undergraduate study of Nutrition (2012-2017)
Authorship of university textbooks from the field of the course	<ol style="list-style-type: none"> 1. „Bioactive components from olive oil as putative epigenetic modulators“, book chapter „Olives and Olive Oil as Functional Foods“, Wiley, 2017. 2. „Polyphenols – food source and health benefits“, book chapter „Functional food – Improve Health through Adequate Food“, InTech Open, 2017. 3. Introduction to Food Science. Revised lectures, available on web pages of the Faculty of Chemistry and Technology 2013. 4. Dietetics. Revised lectures, available at web pages of the Faculty of Chemistry and Technology, 2013. 5. Zdravlje iz maslinovog ulja (Health from Olive Oil), book, 2015, publisher Kronomedica
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Liović, N., Čikeš Čulić, V., Fredotović, Ž., Krešić, G., <u>Bilušić, T.</u> (2021): The effect of processing techniques on the antiproliferative activity of blueberry phenolics before and after in vitro digestion. Journal of Food Processing and Preservation, https://doi.org/10.1111/jfpp.16140 2. Blažević, Ivica; Đulović, Azra; Burčul, Franko; Popović, Marijana; Montaut, Sabina; <u>Bilušić, Tea</u>; Vrca, Ivana; Markić, Joško; Ljubenković, Ivica; Ruščić, Mirko; Rollin, Patrick (2020): Stability and bioaccessibility during ex vivo digestion of glucoraphenin and glucoraphastin from <i>Matthiola incana</i> (L.), Journal of Food Composition and Analysis, 90, 103483, 7 3. <u>Bilušić, Tea</u>; Drvenica, Ivana; Kalušević, Ana; Marijanović, Zvonimir; Jerković Igor; Mužek, Mario

	<p>Nikola; Bratanić, Andre; Skroza, Danijela; Zorić, Zoran; Pedišić, Sandra et al. (2020): Influences of freeze- and spray drying vs. encapsulation with soy and whey proteins on gastrointestinal stability and antioxidant activity of Mediterranean aromatic herbs. <i>International Journal of Food Science & Technology</i>, https://doi.org/10.1111/ijfs.14774</p> <p>4. Liović, Nikolina; Bratanić, Andre; Zorić, Zoran; Pedišić, Sandra; Režek Jambrak, Anet; Krešić, Greta; <u>Bilušić, Tea</u> (2021): The effect of freeze-drying, pasteurisation and high-intensity ultrasound on gastrointestinal stability and antioxidant activity of blueberry phenolics. <i>International Journal of Food Science & Technology</i>, 56, 4, 1996-2008.</p> <p>5. Drvenica, Ivana, Blažević, Ivica, Bošković, Perica, Bratanić, Andre, Bugarski, Branko, <u>Bilušić, Tea</u> (2021): Sinigrin encapsulation in liposomes: Influence on <i>in vitro</i> digestion and antioxidant potential. <i>Polish Journal of Food and Nutrition Sciences</i>, DOI: https://doi.org/10.31883/pjfn/143574</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. The influence of modified atmosphere and cultivar on the quantitative and qualitative composition of phenolic secoiridoids from extra virgin olive oil during storage (2018-2020), project coordinator (Split-Dalmatian County scientific project) 2. Lipids, phenolics and genetic profile from autochthonous olive cultivars Oblica, Drobница, Buhavica and Levantinka afer early and late harvesting period, project coordinator (Split-Dalmatian County scientific project), (2016-2017) 3. Enhancement of stability and bioavailability of selected phytochemicals using various delivery systems and mathematics modeling of in vitro digestion process, bilateral scientific project (Croatia – Serbia, 2016-2017), project coordinator 4. Reinforcement of Mediterranean olive oil sector competitiveness through development and application of innovative production and quality control methodologies related to olive oil health protecting properties, EU INTERREG MED project (2016-2020), coordinator at the University of Split 5. Plants as source of sulphur containing compounds and their ability of hyperaccumulation of metals, HRZZ project, project participant (2017-2021)
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2017- Award for reserach, University of Split</p> <p>2017- Annual award for science, „Slobodna Dalmatia“</p>

Title, name and last name of the course leader	Prof.dr.sc. Vesna Boraska Perica
Title of the course at the proposed study programme	Cell biology
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2, 21000 Split
Telephone number	091 534 15 12
E-mail address	vboraska@mefst.hr
Personal web page	<u>MEFST - Medicinski fakultet Split - Genetic analysis of thyroid disorders (unist.hr)</u>
Year of birth	1977
Scientist ID	276771
CROSBİ profile ID	22214
Research rank and date of the last appointment	Scientific advisor, 18.6.2019.
Research and teaching or teaching rank, and the date of the last appointment	Full professor, 14.7.2021.
Area and field of appointment into research rank	Area of Natural Sciences, Field of Biology
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	1.12.2002.
Job title (professor, researcher, associate teacher, etc.)	Full professor
Field of research	Human genetics
Position in the institution	Head of Department for Medical Biology
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of Mathematics and Natural Sciences, University of Zagreb
Place	Zagreb
Date	18.7.2008.
INFORMATION ON ADDITIONAL TRAINING	
Year	2009-2012
Place	Cambridge, UK
Institution	Wellcome Trust Sanger Institute
Field of training	Statistical genetics
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Spanish (3)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	“Medical biology” – Medical studies in Croatian and English language (course teacher) and Dental studies (course leader) ” Statistical genetics and genomic databases“, Graduate school „Translational Research in Biomedicine (TRIBE program)“, (course leader)

Authorship of university textbooks from the field of the course	/
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>Cvek M, Punda A, Brekalo M, Plosnić M, Barić A, Kaličanin D, Brčić L, Vuletić M, Gunjača I, Torlak Lovrić V, Škrabić V, Boraska Perica V. Presence or severity of Hashimoto's thyroiditis does not influence basal calcitonin levels: observations from CROHT biobank. <i>J Endocrinol Invest.</i> 2021 Oct 6. doi: 10.1007/s40618-021-01685-3. Online ahead of print.</p> <p>Cvek M, Kaličanin D, Barić A, Vuletić M, Gunjača I, Torlak Lovrić V, Škrabić V, Punda A, Boraska Perica V. Vitamin D and Hashimoto's Thyroiditis: Observations from CROHT Biobank. <i>Nutrients.</i> 2021 Aug 15;13(8):2793. doi: 10.3390/nu13082793</p> <p>Kaličanin D, Brčić L, Ljubetić K, Barić A, Gračan S, Brekalo M, Torlak Lovrić V, Kolčić I, Polašek O, Zemunik T, Punda A, Boraska Perica V. Differences in food consumption between patients with Hashimoto's thyroiditis and healthy individuals. <i>Sci Rep.</i> 2020 Jun 30;10(1):10670. doi: 10.1038/s41598-020-67719-7.</p> <p>Brčić L, Barić A, Benzon B, Brekalo M, Gračan S, Kaličanin D, Škrabić V, Zemunik T, Barbalić M, Novak I, Pešutić Pisac V, Punda A, Boraska Perica V. AATF and SMARCA2 are associated with thyroid volume in Hashimoto's thyroiditis patients. <i>Sci Rep.</i> 2020 Feb 4;10(1):1754. doi: 10.1038/s41598-020-58457-x.</p> <p>Brčić L, Barić A, Gračan S, Torlak V, Brekalo M, Škrabić V, Zemunik T, Barbalić M, Punda A, Boraska Perica V. Genome-wide association analysis suggests novel loci underlying thyroid antibodies in Hashimoto's thyroiditis. <i>Sci Rep.</i> 2019 Mar 29;9(1):5360. doi: 10.1038/s41598-019-41850-6.</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	/
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>2019 HAZU Foundation grant for project „Analysis of the role of vitamin D with the presence and clinical manifestation of Hashimoto's thyroiditis” Project leader</p> <p>2016 Foundation Adris program „Knowledge and Discoveries”, project „Analysis of immunologic response to food proteins in development of Hashimoto's thyroiditis” Project leader</p> <p>2014-2018 Croatian Science Foundation Installation grant UIP-11-2013 no. 4950 „Genome-wide association analysis of Hashimoto thyroiditis”, Medical School University of Split, Project leader</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Through continuous teaching on various over 20 years (Medicine, Medicine in English, Pharmacy, Dental studies, Graduate school).

	Continual Medical Education “Skills in Medical Education and Scientific Work”, 11th -13th February 2008, University of Split School of Medicine
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2021 Croatia’s delegate in the Council of European Molecular Biology Laboratory (EMBL)</p> <p>2020 University of Split Annual Scientific Award for 2020</p> <p>2015 Award for the first authorship for the best scientific article from University of Split School of Medicine in the year 2014/2015</p> <p>2013 Annual Young Scientist Award – Croatian Society for Biochemistry and Molecular Biology (HDBMB)</p> <p>2012 ENGAGE (European Network of Genomic and Genetic Epidemiology) Young Investigator - Summer 2012 based on the publication ‘Genome-wide meta-analysis of common variant differences between men and women’ (Boraska et al., Hum Mol Genet, August 2012)</p> <p>2006-2008 Scholarship for the best postgraduate student from the Split municipality 2006/2007 and 2007/2008</p> <p>2006 Award for the first authorship for the best scientific article from University of Split School of Medicine in the year 2005/2006</p> <p>1996-2001 Croatian National Scholarship Award for undergraduate students</p>

Title, name and last name of the course leader	Asst. Prof. Josipa Bukić
Title of the course at the proposed study programme	Clinical Pharmacy and Pharmacotherapy, Phytotherapy, Extemporaneous Preparations, Pharmacognosy
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2
Telephone number	021 557 800
E-mail address	jbukic@mefst.hr
Personal web page	https://www.bib.irb.hr/pregled/profil/34137
Year of birth	1989.
Scientist ID	361920
CROSBi profile ID	34137
Research rank and date of the last appointment	
Research and teaching or teaching rank, and the date of the last appointment	Assistant professor, 11 th November 2021
Area and field of appointment into research rank	Biomedicine and health, Pharmacy
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	22 nd March 2016
Job title (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	pharmacy, phytotherapy, public health, pharmacovigilance
Position in the institution	Teacher in Pharmaceutical formulations, Clinical pharmacy, Quality of herbal products, Phytotherapy, Extemporaneous preparations
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	Split
Date	26 th October 2020
INFORMATION ON ADDITIONAL TRAINING	
Year	2021
Place	Zagreb
Institution	University of Zagreb Faculty of Pharmacy and Biochemistry
Field of training	Clinical pharmacy
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	Rusic D, Bukic J. Students' handbook for pharmacy professional training. Split: Sveučilište u Splitu;2021.

Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>1. Zekan L, Mestrovic A, Perisin AS, Bukic J, Leskur D, Rusic D, Modun D. Improving community pharmacists clinical knowledge to detect and resolve drug related problem in Croatia; a before/after survey study investigating the efficiency of an educational intervention. <i>BMJ open</i>. 2020;10(6):34674.</p> <p>2. Bukic J, Rusic D, Mas P, Karabatic D, Bozic J, Seselja Perisin, A, Leskur D, Krnic D, Tomic S, Modun D. Analysis of spontaneous reporting of suspected adverse drug reactions for non-analgesic over-the-counter drugs from 2008 to 2017. <i>BMC Pharmacol Toxicol</i>. 2019;20:60.</p> <p>3. Seselja Perisin A, Mestrovic A, Bozic J, Kacic J, Bukic J, Leskur D, Rusic D, Zekan L, Stipic M, Modun D. Interprofessional pharmacotherapy workshop: intervention to improve health professionals' and students' attitudes towards collaboration between physicians and pharmacists. <i>J Interprof Care</i>. 2019;33:456-463.</p> <p>državama. <i>Medicina Fluminensis</i>. 2019;4:337-345.</p> <p>4. Knežević E, Rušić D, Bukić J, Božić J, Šešelja Perišin A, Leskur D, Modun D, Tomić S. Review of incentives for pediatric drug development and of the number of phase III clinical trials in selected countries. <i>Medicina Fluminensis</i>. 2019;4:337-345.</p> <p>5. Bukic J, Rusic D, Bozic J, Zekan L, Leskur D, Seselja Perisin A, Modun D. Differences among health care students' attitudes, knowledge and use of dietary supplements: a cross-sectional study. <i>Complement Ther Med</i>. 2018;41:35-40.</p>
Professional and research papers in methodology and quality of teaching published in the last five years (max 5 references)	<p>1. Bukić J, Rušić D, Šešelja Perišin A, Leskur D, Meštović A, Modun D. Development and implementation of objective structured clinical examination (OSCE) at the Split School of Medicine pharmacy studies. <i>Farm glas</i>. 2018;74:97-108.</p>
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>2021. – 2024. Erasmus+ Programme „Innovating quality assessment tools for pharmacy studies in Bosnia and Herzegovina“ (IQPHARM) (Contract No: 618089-EPP-1-2929-1-BA-EPPKA2-CBHE-JP). Collaborator</p> <p>2019. – 2022. European Social Fund „Primjena HKO-a u unapređenju studijskih programa u području farmacije i medicinske biokemije“, (Contract No: UP.03.1.1.03.0021). Collaborator</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	<p>Medical education competences“ course at Medical Faculty University of Split</p>
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2021. – Diploma of the Croatian Pharmaceutical Society</p> <p>2019. – Best poster presentation in the section „Other topics in pharmacology“ at 9th Croatian Congress of Pharmacology with International Participation</p> <p>2018. – poster of distinction: Tadin Hadjina I, Zivkovic PM, Matetic A, Borovac JA, Bukic J, Rusic D, Tonkic A, Bozic, J. Dietary patterns in patients with inflammatory bowel disease. Tailored Therapies for IBD: A Look into the Future – Abstracts. Milano, Italy, 2018.</p>

Title, name and last name of the course leader	Assoc. Prof. Vedrana Čikeš Čulić
Title of the course at the proposed study programme	Applied Biochemistry
GENERAL INFORMATION ON COURSE LEADER	
Address	Odeska 9, Split
Telephone number	+38521557938
E-mail address	vedrana.cikes.culic@mefst.hr
Personal web page	
Year of birth	1976
Scientist ID	272311
CROSBİ profile ID	22358
Research rank and date of the last appointment	Senior scientific associate, 11.5.2017.
Research and teaching or teaching rank, and the date of the last appointment	Associate professor, 11.5.2017.
Area and field of appointment into research rank	Biomedicine and health, Pharmacy
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	1.9.2004.
Job title (professor, researcher, associate teacher, etc.)	Professor
Field of research	Medical chemistry and biochemistry
Position in the institution	Member of the Department of medical chemistry and biochemistry
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of Pharmacy and Biochemistry, University of Zagreb
Place	Zagreb
Date	16.7.2009.
INFORMATION ON ADDITIONAL TRAINING	
Year	2000/01
Place	Split
Institution	University hospital center Split, Department of medical-laboratory diagnostics
Field of training	Medical-laboratory diagnostics
Year	2009
Place	Antwerpen, Belgium
Institution	University hospital Antwerpen
Field of training	Analysis of EPC, EMP, cell culture
Year	2012/2013
Place	Baltimore, USA
Institution	Johns Hopkins University
Field of training	Postdoctoral fellow in cancer research
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian, 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French, 2

COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	2012-2020: leader of the courses Biochemistry 2 and Glycobiology of hematopoiesis, University Department of Health Studies, bachelor's degree 2013-today: leader of the course Applied biochemistry, Pharmacy, master's degree
Authorship of university textbooks from the field of the course	Medical Chemistry, laboratory manual, 2021.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>Rončević, Tomislav; Čikeš-Čulić, Vedrana; Maravić, Ana; Capanni, Francesca; Gerdol, Marco; Pacor, Sabrina; Tossi, Alessandro; Giulianini, Piero G.; Pallavicini, Alberto; Manfrin, Chiara. Identification and functional characterization of the astacidin family of proline-rich host defence peptides (PcAst) from the red swamp crayfish (<i>Procambarus clarkii</i>, Girard 1852). <i>Developmental and comparative immunology</i>, 105 (2020), 103574, 9 doi:10.1016/j.dci.2019.103574.</p> <p>Blažević, Ivica; Đulović, Azra; Čikeš Čulić, Vedrana; Popović, Marijana, Guillot, Xavier, Burčul, Franko; Rollin, Patrick. Microwave-Assisted versus Conventional Isolation of Glucosinolate Degradation Products from <i>Lunaria annua</i> L. and Their Cytotoxic Activity. <i>Biomolecules</i>, 10 (2020), 215; 1-11 doi:10.3390/biom10020215.</p> <p>Sandra Marijan, Anita Markotić, Angela Mastelić, Nikolina Režić-Mužinić, Lisa Ivy Pilkington, Johannes Reynisson, Vedrana Čikeš Čulić. Glycosphingolipid expression at breast cancer stem cells after novel thieno[2,3-<i>b</i>]pyridine anticancer compound treatment. <i>Scientific Reports</i>, accepted for publication, June 2020. Article DOI:10.1038/s41598-020-68516-y</p> <p>Sandra Marijan, Angela Mastelić, Anita Markotić, Nikolina Režić-Mužinić, Nikolina Vučenović, David Barker, Lisa I. Pilkington, Jóhannes Reynisson and Vedrana Čikeš Čulić. Thieno[2,3-<i>b</i>]Pyridine Derivative Targets Epithelial, Mesenchymal and Hybrid CD15s+ Breast Cancer Cells. <i>Medicines</i> 2021, 8, 32. https://doi.org/10.3390/medicines8070032</p> <p>Pervan, M.; Marijan, S.; Markotić, A.; Pilkington, L.I.; Haverkate, N.A.; Barker, D.; Reynisson, J.; Meić, L.; Radan, M.; Čikeš Čulić, V. Novel Thieno [2,3-<i>b</i>]pyridine Anticancer Compound Lowers Cancer Stem Cell Fraction Inducing Shift of Lipid to Glucose Metabolism. <i>Int. J. Mol. Sci.</i> 2022, <i>23</i>, 11457. https://doi.org/10.3390/ijms231911457</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	2016. – 2017. <u>Leader</u> of the HAMAG-BICRO project „RNaseH2A as a new target in diagnostics and treatment of bladder cancer“, PoC6_6_75-U-1

	2017. – 2021. <u>Collaborator</u> at HRZZ project „Plants as a source of bioactive sulfur compounds and their ability to hyperaccumulate metals“, IP-2016-06-131, leader assoc. prof. Ivica Blažević, PhD
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	As part of the course "Skills of medical education and scientific work" held at the University of Split School of Medicine
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<ul style="list-style-type: none"> • 1995 – 1999. Split City Award for the best students • 2006. Croatian Society of Medical Biochemistry Award „Krešo Lipovac“ for the best scientific novice for

Title, name and last name of the course leader	Prof. Valerija Dunkić, PhD
Title of the course at the proposed study programme	Pharmaceutical Botany
GENERAL INFORMATION ON COURSE LEADER	
Address	Split, Trondheimska 4 b
Telephone number	+38521 469 006
E-mail address	dunkc@pmfst.hr
Personal web page	https://www.pmfst.unist.hr/team/valerija-dunkic/
Year of birth	1967.
Scientist ID	210036
CROSBi profile ID	35512
Research rank and date of the last appointment	Scientific Adviser of Natural sciences field Biology, 22. March 2018; research associate biotechnical sciences scientific field food technology, 26. March 2018
Research and teaching or teaching rank, and the date of the last appointment	Full Professor of Natural sciences field Biology, 16. May, 2018.
Area and field of appointment into research rank	Botany
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Science, University of Split
Date of employment	25. 04. 1995
Job title (professor, researcher, associate teacher, etc.)	professor
Field of research	Plant physiology and botany
Position in the institution	Professor and researcher
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of Science, University of Zagreb
Place	Zagreb
Date	27. 04. 2006.
INFORMATION ON ADDITIONAL TRAINING	
Year	2004
Place	Zagreb
Institution	Institute of Ruđer Bošković
Field of training	Electron microscopy
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Botany and Plant Physiology, mandatory courses for teachers and students of nutritional sciences. Isolation and application of essential oils and Xerophyte and their secondary metabolites, Basics of the Mediterranean diet obligatory courses, in PhD study obligatory course Plants macromolecules and isolation at the Faculty of Science, University of Split.

	Pharmaceutical botany, mandatory course of study in Pharmacy
Authorship of university textbooks from the field of the course	Bezić, Nada; Dunkić, Valerija; Vuko Elma. Antiphytoviral Activity of Essential Oils of Some Lamiaceae Species and Their Most Important Compounds on CMV and TMV // Microbial pathogens and strategies for combating them: science, technology and education / A. Méndez-Vilas (ur.).Badajoz, Spain : Formatex Research Center, 2013. Str. 982-988
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>1. Nazlić, Marija; Fredotović, Željana; Vuko, Elma; Vuletić, Nenad; Ljubenković, Ivica; Kremer, Dario; Jurišić Grubešić, Renata; Stabentheiner, Edith; Randić, Marko; Dunkić, Valerija <u>Free Volatile Compounds of Veronica austriaca ssp. jacquinii (Baumg.) Eb. Fisch. and Their Biological Activity // Plants, 10 (2021), 2529; 1-22</u></p> <p>2. Jurišić Grubešić, Renata; Nazlić, Marija; Miletić, Tina; Vuko, Elma; Vuletić, Nenad; Ljubenković, Ivica; Dunkić, Valerija <u>Antioxidant Capacity of Free Volatile Compounds from Olea europaea L. cv. Oblica Leaves Depending on the Vegetation Stage // Antioxidants, 10 (2021),</u></p> <p>3. Nazlić, Marija; Fredotović, Željana; Vuko, Elma; Fabijanić, Lea; Kremer, Dario; Stabentheiner, Edith; Ruščić, Mirko; Dunkić, Valerija <u>Wild Species Veronica officinalis L. and Veronica saturejoides Vis. ssp. saturejoides-Biological Potential of Free Volatiles // Horticulturae, 7 (2021), 9; 295, 19</u></p> <p>4. Kremer, Dario; Stabentheiner, Edith; Bogunić, Faruk; Ballian, Dalibor; Eleftheriadou, Eleni; Stešević, Danijela; Matevski, Vlado; Ranđelović, Vladimir; Ivanova, Daniella; Ruščić, Mirko; Dunkić, Valerija <u>Micromorphological Traits of Balcanic Micromeria and Closely Related Clinopodium Species (Lamiaceae) // Plants, 10 (2021)</u></p> <p>5. Nazlić, Marija; Kremer, Dario; Grubešić, Renata; Jurišić, Soldo, Barbara; Vuko, Elma; Stabentheiner, Edith; Ballian, Dalibor; Bogunić, Faruk; Dunkić, Valerija <u>Endemic Veronica saturejoides Vis. ssp. saturejoides-Chemical Composition and Antioxidant Activity of Free Volatile Compounds // Plants, 9 (2020), 12; 1646, 16</u></p>
Professional and research papers in methodology and quality of teaching published in the last five years (max 5 references)	Mihanović, Frane; Bezić, Nada; Dunkić, Valerija; Vuko, Elma; Matijević, Jurica. Skulptura raspjetoga Krista iz lopudske Crkve Gospe od Šunja. // Dubrovnik : časopis za književnost i znanost. 2 (2010) , - ; 201-227 (članak, znanstveni).
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	2021-2025. Croatian <i>Veronica</i> species: Phytotaxonomy and Biological Activity, CROVeS-PhyBA, HrZZ IP-2020-02-8425; Leader: Valerija Dunkić 2014 - 2017 - Taxonomy, Ecology and Utilization of Carob Tree (<i>Ceratonia siliqua</i> L.) and Bay Laurel (<i>Laurus nobilis</i> L.) in Croatia HrZZ IP-11-2013-3304 TEUCLIC - associated leader; Leader: Siniša Srećec
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	teaching study
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Prof. Darko Duplančić
Title of the course at the proposed study programme	Pharmaceutical Ethics and Deontology
GENERAL INFORMATION ON COURSE LEADER	
Address	Prilaz braće Kaliterna 6 2100 Split
Telephone number	0912507363
E-mail address	dduplanc@mefst.hr
Personal web page	
Year of birth	1962
Scientist ID	181400
CROSBİ profile ID	14253
Research rank and date of the last appointment	Scientific advisor -2018
Research and teaching or teaching rank, and the date of the last appointment	Full Professor-2019
Area and field of appointment into research rank	Clinical medical sciences, internal medicine
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split, School of medicine, University hospital Split
Date of employment	2003
Job title (professor, researcher, associate teacher, etc.)	full professor, doctor of medicine, cardiologist
Field of research	Cardiology, Humanities
Position in the institution	Head of department
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	MD, PhD
Institution	University of Zagreb Medical School, University of Split Medical School
Place	Split
Date	1987, 2006
INFORMATION ON ADDITIONAL TRAINING	
Year	1991-1995
Place	Zagreb, Split
Institution	University Hospital Sisters of Mercy Zagreb, University Hospital Zagreb, University Hospital Split
Field of training	Internal Medicine, Cardiology
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Internal Medicine, Patophysiology

Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>Roman Military Medicine and Croatian Archaeological Perspectives Marijan Cesarik, Nikola Cesarik, Darko Duplančić, David Štrmelj</p> <p>Borovac, Josip Anđelo; D'Amario, Domenico; Glavaš, Duška; Sušilović Grabovac, Zora; Šupe Domic, Daniela; Novak, Katarina; Bradarić, Anteo; Miličić, Davor; Duplančić, Darko; Božić, Joško P267 The S2PLIT-UG score, a novel system identifying patients with a high risk of all- cause mortality following acute decompensation of heart failure, correlates with levels of sST2, hs-cTnl and NT-proBNP // European Journal of Heart Failure, 22 (2020), S1; 27-28 doi:10.1002/ejhf.1963</p> <p>Borovac, Josip Anđelo; Glavaš, Duška; Sušilović Grabovac, Zora; Bradarić, Anteo; Šupe Domic, Daniela; Duplančić, Darko; Božić, Joško P255 Non-ischemic myocardial injury in heart failure is significantly associated with a higher symptomatic burden and higher circulating levels of sST2, inflammation mediators and natriuretic peptides // European Journal of Heart Failure, 22 (2020), S1; 23-24 doi:10.1002/ejhf.1963</p> <p>Borovac, Josip Anđelo; Sušilović Grabovac, Zora; Bradarić, Anteo; Glavaš, Duška; Duplančić, Darko; Božić, Joško P254 Left ventricular global longitudinal strain and free wall strain of the right ventricle in respect to sex and systolic function among patients with acutely decompensated heart failure // European Journal of Heart Failure, 22 (2020), S1; 23-23 doi:10.1002/ejhf.1963</p> <p>Borovac, Josip Anđelo; Glavas, Duska; Susilovic Grabovac, Zora; Supe Domic, Daniela; Stanisic, Lada; D'Amario, Domenico; Duplancic, Darko; Bozic, Josko Right Ventricular Free Wall Strain and Congestive Hepatopathy in Patients with Acute Worsening of Chronic Heart Failure: A CATSTAT- HF Echo Substudy // Journal of clinical medicine, 9 (2020), 5; 1317, 14 doi:10.3390/jcm9051317</p> <p>Left-Ventricular Function After 3 Months of Sacubitril-Valsartan in Acute Decompensated Heart Failure. Mirić D, Baković D, Eterović D, Sorić T, Čapkun V, Vuković I, Duplančić D, Barac A. J Cardiovasc Transl Res. 2021 Apr;14(2):290-298. doi: 10.1007/s12265-020-10041-4. Epub 2020 Jun 18. PMID: 32557158</p> <p>CONCURRENT DEEP VEIN THROMBOSIS AND PULMONARY EMBOLISM ASSOCIATED WITH HYPERTHYROIDISM: A CASE REPORT. Katić J, Katić A, Katić K, Duplančić D, Lozo M. Acta Clin Croat. 2021 Jun;60(2):314-316. doi: 10.20471/acc.2021.60.02.20.</p>

	<p>PMID: 34744284 Free PMC article.</p> <p>An unusual case of acute myopericarditis after the first dose of capecitabine: Need for new cardioprotective strategies and risk stratification.</p> <p>Meter M, Gavran I, Bajo D, Duplancic D. Int J Clin Pharmacol Ther. 2021 Sep 10. doi: 10.5414/CP204006. Online ahead of print</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Asoc. Prof. Trpimir Glavina
Title of the course at the proposed study programme	Psychopharmacotherapy
GENERAL INFORMATION ON COURSE LEADER	
Address	Put polja 6, Klis
Telephone number	098 422 557
E-mail address	tglavina@kbsplit.hr
Personal web page	
Year of birth	1963
Scientist ID	259794
CROSBİ profile ID	21440
Research rank and date of the last appointment	PhD, 2012.
Research and teaching or teaching rank, and the date of the last appointment	Associate professor , Nov 2021.
Area and field of appointment into research rank	Psychiatry
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Clinical hospital center Split/ School of Medicine University of Split
Date of employment	1991
Job title (professor, researcher, associate teacher, etc.)	Psychiatrist/ Professor
Field of research	Psychiatry
Position in the institution	Psychiatrist/professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	School of Medicine University of Split
Place	Split
Date	2012.
INFORMATION ON ADDITIONAL TRAINING	
Year	Sub- specialization in forensic psychiatry and biological psychiatry
Place	Split
Institution	Clinical hospital Center Split
Field of training	Psychiatry
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Teaching psychiatry to medicine students Teaching psychiatry to nursing students Teaching psychiatry to students of physiotherapy Teaching psychiatry at Postgraduate Specialistic Course "Medicine and Law" at Faculty of Law, University of Split
Authorship of university textbooks from the field of the course	Đulijano Ljubičić i sur. "Depresija i duhovnost" Sveučilište u Rijeci, Medicinski fakultet u Rijeci, 2010. Miro Jakovljević i sur. "Serotonin i depresija-mitovi i činjenice" Pro mente Zagreb, 2013. Miro Jakovljević i sur. "Dopamin u zdravlju i bolesti-mitovi i činjenice" Pro mente Zagreb, 2015. Trpimir Glavina, Vlado Jukić ur. "Borben Uglešić 90 godina života i 60 godina psihijatrije", Medicinska naklada, Zagreb, 2016. Harrison principi interne medicine - priručnik 19. američko/ 4. hrvatsko izdanje, 2019. Ivančević i sur. (Glavina-koautor)
Professional and research papers published in the last five years from the field of the course (max 5 references)	Glavina T. Klinička obilježja i dijagnoza psihotičnih poremećaja. Medicus, Vol.26 No.2 Psihijatrija danas 2017. 127-31. Uglešić L, Glavina T, Lasić D, Kaliterna M. Postinjection Delirium/Sedation Syndrome (PDSS) Following Olanzapine Long-Acting Injection: A Case Report. Psychiatr Danub. 2017 Mar;29(1):90-91. Jukić M, Filaković P, Požgain I, Glavina T. Health-Related Quality of Life of Ex-Prisoners of War Affected by Posttraumatic Stress Disorder 25 Years After Captivity. Psychiatr Danub, 2019 Jun; 31(2):189-200. Duraković, Din; Silić, Ante; Peitl, Vjekoslav; Tadić, Rašeljka; Lončarić, Kristina; Glavina, Trpimir; Šago, Danijela; Pačić-Turk, Ljiljana; Karlović, Dalibor The Use of Electroretinography and Optical Coherence Tomography in Patients with Schizophrenia // Acta clinica Croatica, 59 (2020), 4; 729-739 Borovina T, Mastelić T, Glavina G, Glavina T. Covid-19 associated psychotic disorder with suicidal behavior-case report. Psychiatr Danub, 2021;33(3):421-4.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	OUTPATIENT PSYCHOTHERAPY TREATMENT FOR WAR VETERANS WITH PTSD , 141-0000000-0068
Professional and research projects from the field of the course carried	Randomizirano, dvostruko slijepo, placebom i aktivno kontrolirano ispitivanje faze 2B za procjenu učinkovitosti i

<p>out in the last five years (max 5 references)</p>	<p>sigurnosti lijeka MK-8189 kod ispitanika s akutnom epizodom shizofrenije“ /“A Phase 2B Randomized, Double-Blind, Placebo- and Active-Controlled Trial of the Efficacy and Safety of MK-8189 in Participants Experiencing an Acute Episode of Schizophrenia“/ Plan ispitivanja: MK-8189-008, EudraCT broj: 2020-000094-24 Ispitivani lijek: MK-8189 Indikacija u kojoj se lijek ispituje: shizofrenija Randomizirana, otvorena, ukrižena studija za utvrđivanje relativne bioraspoloživosti LY03004 i EU Risperdal® Consta® u dozi od 50 mg nakon opetovanih intramuskularnih injekcija u stabilnih pacijenata oboljelih od shizofrenije“ /„A Randomized, Open-Label, Cross-over Study to Assess the Relative Bioavailability of LY03004 and EU Risperdal® Consta® at 50 mg Following Multiple Intramuscular Injections in Stable Patients with Schizophrenia“/ Plan ispitivanja: CLY16001/LY03004/CT-EUR-101, EudraCT broj: 2016-005010-22 Ispitivani lijek: LY03004 (risperidon) Indikacija u kojoj se lijek ispituje: shizofrenija Multicentrično, otvoreno ispitivanje za procjenu sigurnosti i tolerancije lijeka brekspiprazola u liječenju bolesnika s bipolarnim I poremećajem“ /„A Multicenter, Open-label Trial to Evaluate the Safety and Tolerability of Brexpiprazole in the Treatment of Subjects with Bipolar I Disorder“/ Plan ispitivanja: 331-201-00083, EudraCT broj: 2017-002225-38 Ispitivani lijek: brekspiprazol Indikacija u kojoj se lijek ispituje: bipolarni poremećaj tip I Multicentrično, randomizirano, dvostruko slijepo, placebom kontrolirano kliničko ispitivanje brekspiprazola u akutnom liječenju maničnih epizoda sa ili bez kombiniranih značajki povezanih s bipolarnim I poremećajem“ /„A Multicenter, Randomized, Double-blind Trial of Brexpiprazole versus Placebo for the Acute Treatment of Manic Episodes, With or Without Mixed Features, Associated With Bipolar I Disorder“/ Plan ispitivanja: 331-201-00081, EudraCT broj: 2017-002190-20 Ispitivani lijek: brekspiprazol Indikacija u kojoj se lijek ispituje: liječenje maničnih epizoda u bolesnika s bipolarnim poremećajem tip I</p>
<p>Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?</p>	
<p>PRIZES AND AWARDS</p>	
<p>Prizes and awards for teaching and research</p>	

Title, name and last name of the course leader	Asst. Prof. Miće Jakić
Title of the course at the proposed study programme	Technology of Synthetic Drugs
GENERAL INFORMATION ON COURSE LEADER	
Address	Ruđera Boškovića 35, 21000 Split
Telephone number	021/329-455
E-mail address	mice.jakic@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/kontakt-3/kontakt-djelatnici/item/jakic-mice
Year of birth	1981
Scientist ID	303245
CROSBİ profile ID	24075
Research rank and date of the last appointment	Senior Research Associate; 26.01.2022.
Research and teaching or teaching rank, and the date of the last appointment	Assistant Professor; 01.03.2018.
Area and field of appointment into research rank	Technical Sciences, Chemical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology Split
Date of employment	01.03.2008.
Job title (professor, researcher, associate teacher, etc.)	professor
Field of research	Chemical engineering
Position in the institution	Assistant Professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Assistant Professor
Institution	Faculty of Chemistry and Technology Split
Place	Split
Date	01.03.2018.
INFORMATION ON ADDITIONAL TRAINING	
Year	-
Place	-
Institution	-
Field of training	-
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English; 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	-
Authorship of university textbooks from the field of the course	-
Professional and research papers	-

published in the last five years from the field of the course (max 5 references)	
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	-
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	-
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	-
PRIZES AND AWARDS	
Prizes and awards for teaching and research	-

First and last name and title of teacher	Prof. Igor Jerković
The course he/she teaches in the proposed study programme	Organic Chemistry I
GENERAL INFORMATION ON COURSE TEACHER	
Address	Faculty of Chemistry and Technology, University of Split, R. Boškovića 35, 21000 Split
Telephone number	+385 21 329 436
E-mail address	igor@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/kontakt-3/kontakt-djelatnici/item/jerkovic-igor
Year of birth	1975
Scientist ID	226253
Research or art rank, and date of last rank appointment	
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	full professor 21/12/2017
Area and field of election into research or art rank	natural sciences, chemistry
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Faculty of Chemistry and Technology in Split
Date of employment	1/3/1998
Name of position (professor, researcher, associate teacher, etc.)	full professor
Field of research	chemistry of natural organic compounds
Function	vice rector
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph. D
Institution	Faculty of Chemistry and Technology in Split
Place	Split
Date	28/5/2004
INFORMATION ON ADDITIONAL TRAINING	
Year	occasionally from 2009 (total of 3 months)
Place	Cagliari, Italy
Institution	Università degli studi di Cagliari, Facolta di Biologia e Farmacia, Cagliari, Italia
Field of training	chemistry of natural organic compounds
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme)	- Organic Chemistry I (undergraduate university study of Chemistry) - Chemistry and technology of aromatic plants (graduate university study of Chemistry)

where it is/was offered, and level of study programme)	
Authorship of university/faculty textbooks in the field of the course	I. Jerković, A. Radonić, <i>Praktikum iz organske kemije, priručnik Sveučilišta u Splitu</i> , 2009.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	<p>1. S. Radman, A.-M. Cikoš, I. Flanjak, S. Babić, L. Čižmek, D. Šubarić, R. Čož-Rakovac, S. Jokić, and I. Jerković, Less polar compounds and targeted antioxidant potential (in vitro and in vivo) of <i>Codium adhaerens</i> C. Agardh 1822, <i>Pharmaceuticals</i> 2021, 14, 944.</p> <p>2. I. Jerković, A.-M. Cikoš, S. Babić, L. Čižmek, K. Bojanić, K. Aladić, N. V. Ul'yanovskii, D. S. Kosyakov, A. T. Lebedev, R. Čož-Rakovac, P. Trebše, and S. Jokić, Bioprospecting of less-polar constituents from endemic brown macroalga <i>Fucus virsoides</i> J. Agardh from the Adriatic Sea and targeted antioxidant effects in vitro and in vivo (Zebrafish Model), <i>Marine Drugs</i> 2021, 19, 235.</p> <p>3. M. Banožić, K. Aladić, I. Jerković and S. Jokić, Volatile organic compounds of tobacco leaves vs. waste (scrap, dust and midrib): extraction and optimization, <i>Journal of Agricultural and Food Chemistry</i> 101 (2021) 1822-1832.</p> <p>4. P. M. Kuš and I. Jerković, Application of dehydration homogeneous liquid-liquid extraction (DHLLE) sample preparation method for honey volatiles fingerprinting, <i>Molecules</i> 2021, 26, 2277.</p> <p>5. L. Svečnjak, Z. Marijanović, P. Okińczyc, P. M. Kuš and I. Jerković, Mediterranean propolis from the Adriatic Sea islands as a source of natural antioxidants: comprehensive chemical biodiversity determined by GC-MS, FTIR-ATR, UHPLC-DAD-QqTOF-MS, DPPH and FRAP assay, <i>Antioxidants</i> 2020, 9, 337.</p>
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	<ul style="list-style-type: none"> - KK.01.1.1.01.0002: Bioprospecting of the Adriatic Sea, Center of excellence for bioprospecting of the Adriatic Sea (2017.-) - IP-11-2013-8547: Research of Natural Products and Flavours: Chemical Fingerprinting and Unlocking the Potential, research project of Croatian Science Foundation (2014.-2018.)
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences	
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	<ul style="list-style-type: none"> - Plaque of the University of Split for exceptional contribution to the development of the University of Split through distinguished work in the scientific and professional field - Award for Science of the University of Split for scientific contribution in the field of natural sciences, 2020.

	<ul style="list-style-type: none">- Decoration of the Order of the Croatian Weaver for special merits for science and the promotion of science in the Republic of Croatia and the world, 2019.- Award for Science of the University of Split for scientific contribution in the field of natural sciences, 2018.- Award for scientific achievements "Ruđer Bošković", University of Split, 2013.- Award for special achievements in scientific and teaching work, Faculty of Chemistry and Technology in Split, 2011.- Award "Leopold (Lavoslav) Ružička" of the Croatian Chemical Society for Young Scientists for achieved notable results in the field of chemistry of natural compounds, Zagreb, 2006.
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	The results of the student evaluation were performed at University level with the help of the Commission for Quality Control for the courses Organic Chemistry I and Chemistry and Technology of aromatic plants and were very positive.

Title, name and last name of the course leader	Asoc. Prof. Ivana Kolčić
Title of the course at the proposed study programme	How to Live to a Hundred?
GENERAL INFORMATION ON COURSE LEADER	
Address	Ružmarinka 17, 10000 Zagreb
Telephone number	+385915762263
E-mail address	ikolcic@mefst.hr
Personal web page	
Year of birth	1979
Scientist ID	271736
CROSBi profile ID	22792
Research rank and date of the last appointment	Associate Professor, 2018.
Research and teaching or teaching rank, and the date of the last appointment	Associate Professor, 2018.
Area and field of appointment into research rank	Biomedicine and Health, Public Health, Epidemiology
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	2011.
Job title (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Epidemiology
Position in the institution	Associate Professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Medical School University of Zagreb
Place	Zagreb
Date	2009
INFORMATION ON ADDITIONAL TRAINING	
Year	2008
Place	Zagreb
Institution	Medical School University of Zagreb
Field of training	specialty in Epidemiology
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	2019. Visiting Professor at 2 nd level Master Degree in "Dietetics and Clinical Nutrition" at UNIVERSITY OF PAVIA, Department of Public Health, Experimental and Forensic Medicine, delivering a series of educational lectures on "Lifestyle Medicine"

	2013 – Course coordinator for: Epidemiology; Clinical Epidemiology and evidence-based medicine; 2 elective courses; 5 postgraduate level courses at postgraduate program, University of Split School of Medicine
Authorship of university textbooks from the field of the course	<ol style="list-style-type: none"> 1. Ivana Kolčić, Ariana Vorko-Jović (ur). Epidemiologija. Medicinska naklada, 2012. 2. Ferenczi E, Muirhead N (ur). Doktor u jednom potezu - Statistika i epidemiologija. Medicinska naklada, Zagreb, 2012. (translation to Croatian) 3. Ivana Kolčić: Epidemiologija nasilja. U: Ariana Vorko-Jović, Marija Strnad, Igor Rudan (ur.). Epidemiologija kroničnih nezaraznih bolesti. Medicinska naklada, Zagreb, 2010. 4. Maja Miškulin, Ivana Kolčić, Dinko Puntarić: Okoliš i zdravlje. U: Ariana Vorko-Jović, Marija Strnad, Igor Rudan (ur.). Epidemiologija kroničnih nezaraznih bolesti. Medicinska naklada, Zagreb, 2010.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Cena H, Porri D, De Giuseppe R, Kalmpourtzidou A, Salvatore FP, El Ghoch M, Itani L, Kreidieh D, Brytek-Matera A, Pocol CB, Arteta Arteta DS, Utan G, Kolčić I. How Healthy Are Health-Related Behaviors in University Students: The HOLISTic Study. <i>Nutrients</i>. 2021;13:675. 2. Dragun R, Veček NN, Marendić M, Pribisalić A, Đivić G, Cena H, Polašek O, Kolčić I. Have Lifestyle Habits and Psychological Well-Being Changed among Adolescents and Medical Students Due to COVID-19 Lockdown in Croatia? <i>Nutrients</i>. 2020;13:97. 3. Ljubičić M, Baković L, Čoza M, Pribisalić A, Kolčić I. Awakening cortisol indicators, advanced glycation end products, stress perception, depression and anxiety in parents of children with chronic conditions. <i>Psychoneuroendocrinology</i>. 2020;117:104709. 4. Salvatore F, Relja A, Filipčić I, Polašek O, Kolčić I. Mediterranean diet and mental distress: “10,001 Dalmatians” study, <i>Br Food J</i>. 2019;121:1314-26. 5. Relja A, Miljković A, Gelemanović A, Bošković M, Hayward C, Polašek O, Kolčić I. Nut Consumption and Cardiovascular Risk Factors: A Cross-Sectional Study in a Mediterranean Population. <i>Nutrients</i>. 2017;9:E1296.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. COST Action, “Statistical and machine learning techniques in human microbiome studies” (ML4Microbiome) CA18131, Country lead and Management Committee member 2. „Internationalization of the higher education of the University of Split School of Medicine”, EU Social Fund, UP.03.1.1.02.0035 (Leader of development of two new summer schools programmes) 3. “Protein carbonylation in healthy ageing and age-related disease” – CarboNyx (Croatian Science Foundation CSF-PA2016-01, principal investigator Professor Ozren Polašek) 2017-2020 4. Science popularization project “Science on the plate: food of the Mediterranean” (Croatian Ministry of Science and Education, 2017 and 2018)

	5. PREPARE (Platform for European Preparedness Against (Re-)emerging Epidemics (FP7 602525; 2014-2019)
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Course 'How to teach in medicine?' at Medical School University of Zagreb
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2018 Science award by the University of Split</p> <p>2009 Best doctoral thesis award in Public Health, Medical School University of Zagreb</p> <p>2008 National science award for research assistants by the Croatian Parliament</p>

Title, name and last name of the course leader	Assoc. Prof. Jelena Korać Prlić
Title of the course at the proposed study programme	Molecular Biology
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2
Telephone number	021557877
E-mail address	jelena.korac@mefst.hr
Personal web page	http://www.mefst.unist.hr/znanost/istrazivacke-skupine-i-laboratoriji/laboratorij-za-istrazivanje-raka/jelena-korac-prlic/2327
Year of birth	1983
Scientist ID	330282
CROSBİ profile ID	30872
Research rank and date of the last appointment	Senior Research Assistant, March 16 th 2022
Research and teaching or teaching rank, and the date of the last appointment	Associate Professor, April 28 th 2022
Area and field of appointment into research rank	Biomedicine and health, basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	May 1 st 2022
Job title (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Biomedicine and health, basic medical sciences
Position in the institution	Associate Professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	Split, Croatia
Date	June 11 th 2013
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, excellent
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Undergraduate courses: "Immunology and medical genetics" in Medicine and Dental Medicine studies, Medical studies in English, Course "Molecular Biology and Genetics" (course leader) and "Immunology and Vaccines" in Pharmacy studies, elective course "Biochemical scientific curiosities" and "Genetically Modified Organisms: Our Future or Failure" (course leader) Graduate courses: "Cell signalling", elective courses Graduate school – Biology of Neoplasms "Mechanisms of initiation and progression of bladder cancer", "Experimental models in cancer research" (course leader) Graduate school – Evidence based medicine "Genes and signalling",
Authorship of university textbooks from the field of the course	Basic Immunology, Functions and Disorders of the Immune System, 5e, Abul K. Abbas, Andrew H. H. Lichtman, Shiv Pillai. University of Split, School of Medicine, Split, 2017 – Croatian edition, Translation of four chapters

Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>1. Korac-Prlic J*, Degoricija M*, Vilovic K, Vujevic S, Terzic J (2021) BBN-driven urinary bladder cancer mouse model, <i>Methods in Cell Biology</i>, 2021;163:77-92. doi: 10.1016/bs.mcb.2020.10.020. (*equal contribution).</p> <p>2. Korac-Prlic J, Degoricija M, Vilovic K, Ivanisevic T, Haupt B, Frankovic L, Grivennikov S, Terzic J (2020) Stat3 signalling is essential for bladder cancer progression. <i>Cancer Letters</i>, 490:89-99, doi: 10.1016/j.canlet.2020.06.018.</p> <p>3. Degoricija M, Korac-Prlic J, Vilovic K, Ivanisevic T, Haupt B, Palada V, Petkovic M, Karaman I, Terzic J (2019): The dynamics of the inflammatory response during BBN-induced bladder cancerogenesis in mice. <i>Journal of Translational Medicine</i>, 17 (2019), 1; 394, doi: 10.1186/s12967-019-02146-5.</p> <p>4. Zupančič D*, Korac-Prlic J*, Erdani Kreft M, Frankovic L, Vilovic K, Jeruc J, Romih R, Terzić J (2020) Vitamin A enriched diet diminishes early urothelial carcinogenesis. <i>Cancers</i>, 12(7):1712, doi: 10.3390/cancers12071712. (*equal contribution)</p> <p>5. Leznicki P*, Korac-Prlic J*, Kliza K, Husnjak K, Nyathi Y, Dikic I, High S (2015) SGTA binding to Rpn13 selectively modulates protein quality control. <i>J Cell Sci.</i> 128(17):3187-96. doi: 10.1242/jcs.165209. (*equal contribution)</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>HRZZ, UIP-2019-04-6680 "Immunomodulatory role of mast cells and eosinophils in bladder cancer microenvironment" – project leader</p> <p>Prof. Terzić projects:</p> <p>HRZZ, IP-2020-02-8921 „Role of microbiota in bladder cancer development“, IP-2014-09-1904 "Role of inflammation in bladder cancer pathogenesis", MZOŠ „Role of chronic inflammation in cancer development,</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Course of medical education
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2006 SCIENCE Award – The National Foundation for Science, Higher Education and Technological Development of the Republic of Croatia</p> <p>2020 Award for the best scientific article in the field of basic medical sciences in ac. year 2019/20, University of Split, Faculty of Medicine</p>

Title, name and last name of the course leader	Lecturer Sonja Koren
Title of the course at the proposed study programme	Medical English I V
GENERAL INFORMATION ON COURSE LEADER	
Address	Kralja Zvonimira 87
Telephone number	095 8591968
E-mail address	sonja.koren@ozs.unist.hr
Personal web page	/
Year of birth	1963
Scientist ID	
CROSBID profile ID	CROSBID: 1036027
Research rank and date of the last appointment	Lecturer 2013
Research and teaching or teaching rank, and the date of the last appointment	
Area and field of appointment into research rank	Area: humanities, field: philology, branch: English
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University Department of Health Studies
Date of employment	May, 2nd, 2013
Job title (professor, researcher, associate teacher, etc.)	Lecturer
Field of research	Humanities
Position in the institution	
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	MA in English language and literature and French language and literature
Institution	Faculty of Humanities and Social Sciences
Place	Zagreb
Date	1989
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	<ol style="list-style-type: none"> 1. International Scientific and Professional Conference - Contemporary Issues in Economy and Technology - CIET 2014, 19-21 June 2014, University Department of Professional Studies, Split, Croatia (Međunarodna znanstvena i stručna konferencija Contemporary Issues in Economy and Technology - CIET 2014, 19. - 21. lipnja 2014., Sveučilišni odjel za stručne studije, Split, Hrvatska) 2. Grammar Learning Strategies, prof.dr.sc. Miroslaw Pawlak, u organizaciji Zavoda za jezike, Sveučilišni odjel za stručne studije, Split, 7. studenog 2014. 3. Teaching Grammar - A Practical Perspective, dr.sc. Anna Mystkowska-Wiertelak, u organizaciji Zavoda za jezike, Sveučilišni odjel za stručne studije, Split, 7. studenog 2014. 4. Developing English Language Portfolios, Peter Cuypers, MA, predavanje i radionica u organizaciji Ureda za mobilnost i međunarodnu suradnju, 8. svibnja 2015. 5. CLIL (Content and Language Integrated Learning) in Portuguese Higher Education - an ongoing project, dr.sc. Ana Gonçalves, predavanje i radionica u organizaciji Ureda za mobilnost i međunarodnu suradnju, 8. svibnja 2015.

	<p>6. Erasmus+, Introduction to Teaching English for Medical Purposes, 31. kolovoza 2015. – 4. rujna 2015., Ulm, Njemačka</p> <p>7. Workshop „Izrada i pretraživanje maloga specijaliziranoga jezičnoga korpusa“ u organizaciji Udruge nastavnika jezika struke na visokoškolskim ustanovama, 16. veljače 2017.</p> <p>8. Webinar „Corpus-based Discourse Analysis“, Corpus Research Centre, Air University, 26. studenog, 2021.</p> <p>9. IATEFL English for Specific Purposes Special Interest Group online event: ESPSIG: Analysis of learners' needs in the teaching of English for medical purposes, 30. studenog, 2021.</p>
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 3
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	English language for students of medicine at the School of Medicine in Split; English for students of physiotherapy, nursing, midwifery, radiologic technology, and medical laboratory diagnostics at the undergraduate university studies of physiotherapy, nursing, midwifery, radiologic technology and laboratory diagnostics
Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>1. Koren S. (2016). Conceptual Metaphors in Discourse on Organ Donation, Journal of Foreign Language Teaching and Applied Linguistics, Volume 3. – Number 3 – 2016, 163-171. ISSN: 2303-5528</p> <p>2. Duplančić Rogošić G. i Koren S. (2017). Exploring collocational competence of first-year university students as non-native speakers of English“. Conference Proceedings II International Conference From Theory to Practice in Language for Specific Purposes, 23-37. ISSN:1849-9279</p> <p>3. Koren S. i Rogulj J. (2017). Kolokacijska kompetencija neizvornih korisnika engleskog jezika medicinske struke. Zbornik radova Veleučilišta u Šibeniku, 3-4/2017, 19-31. UDK 811.111:61 (izvorni znanstveni članak) ISSN 1846-6699</p> <p>4. Janković S., Koren S., Šarić M., Orlandini R., Antičević V., Švaljug D. i Ante Buljubašić A. (2018). The Croatian Model of University Education for Nurses. International Archives of Nursing and Health Care. ISSN: 2469-5823</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	<p>1. Rogulj J. i Koren S. (2018). Od strukturalizma do suvremenog „kuks“ (komunikacijsko-učenje/usvajanje-kontrastivno-spoznajno) pristupa u nastavi engleskoga jezika. Zbornik radova Veleučilišta u Šibeniku, 3-4/2018,143-159. UDK 371.3:811.111 (pregledni rad) ISSN 1846-6699</p>

	<p>2. Rogulj J. i Koren S. (2017). Analiza slučaja: Disleksija i disgrafija u nastavi engleskoga jezika. <i>Vaspitanje i obrazovanje</i>, XLII, 3-4, 247-267, UDK 371.3:811.111):616.89-008.434.5 (pregledni istraživački rad)</p> <p>3. Duplančić Rogošić G. i Koren S. (2018). Researching Plagiarism in Higher Education – Case of First-Year Students at Selected HEIs. <i>Conference Proceedings Contemporary Issues in Economy & Technology 2018</i>.</p>
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	UNIOS ZUP-2018-77, Figurative language in Health Communication
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Graduated from the Faculty of Humanities and Social Sciences, teacher education
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Associate professor Sandra Kostić, PhD
Title of the course at the proposed study programme	Human Anatomy and Histology, Genes and Pain, How to Make Your Own Organ?, Teratology
GENERAL INFORMATION ON COURSE LEADER	
Address	Marina Getaldića 5, Split
Telephone number	091 561 6722
E-mail address	sandra.kostic@mefst.hr
Personal web page	https://neuron.mefst.hr/docs/katedre/hista/cv/CV_eng-SANDRA_KOSTIC-2019.pdf
Year of birth	1983
Scientist ID	314431
CROSBİ profile ID	25115
Research rank and date of the last appointment	Senior research associate, 2018
Research and teaching or teaching rank, and the date of the last appointment	Associate professor, 2021
Area and field of appointment into research rank	Biomedicine and health, Basic medical sciences, Cytology, Histology and Embryology
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	15.4.2009.
Job title (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Basic medical sciences
Position in the institution	Research, teaching
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	Split, Croatia
Date	13.3.2013.
INFORMATION ON ADDITIONAL TRAINING	
Year	2011-2012
Place	Milwaukee, Wisconsin, United States of America
Institution	Medical College of Wisconsin
Field of training	Electrophysiology, Pain research
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 3
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<ul style="list-style-type: none"> - Histology and embryology (dental medicine, medical studies in English) - Human Anatomy and Histology (Pharmacy) - How to construct your own organ? (medicine, dental medicine, medical studies in English) - Pain and genes – custom made pain treatment (medicine, dental medicine, medical studies in English) - Teratology – taking drugs during pregnancy (medicine) Postgraduate programmes:

	<ul style="list-style-type: none"> - Planning and writing of scientific paper (Biology of tumors) - How to construct your own organ? (Translational research in Biomedicine – TRIBE) -
Authorship of university textbooks from the field of the course	<p>Author:</p> <ul style="list-style-type: none"> - Sapunar, D, Puljak, L, Kostic S, Banozic, A. Are mice small rats? Rodent models of neuropathic pain, in Anatomy and Embryology of the Mouse, A. Marusic, Editor. 2010, University of Split School of Medicine: Split. - Saraga-Babić M, Puljak L, Mardešić S, Kostić S, Sapunar D. Human embryology and histology. Health studies, University of Split, Redak, 2014. <p>Editor:</p> <ul style="list-style-type: none"> - Purves D, Augustine GJ, Fitzpatrick D, Hall WC, LaMantia AS, White LE. Neuroznanost. Urednice hrvatskog izdanja: Heffer M, Puljak L, Kostić S. 2016, Medicinska naklada
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ul style="list-style-type: none"> - Kostic S, Williams B, Ksouri S, Hardung L, Filipovic N, Hamzic LF, Puljak L, Ghahramani N, Vukojevic K. Changes in snail and SRF expression in the kidneys of diabetic rats during ageing. Acta Histochem. 2020; 122(1):151460. doi: 10.1016/j.acthis.2019.151460. - Kostic S, Hauke T, Ghahramani N, Filipovic N, Vukojevic K. Expression pattern of apoptosis-inducing factor in the kidneys of streptozotocin-induced diabetic rats. Acta Histochem. 2020; 122(8):151655. doi: 10.1016/j.acthis.2020.151655. - Kelam N, Racetin A, Katsuyama Y, Vukojević K, Kostić S. Immunohistochemical Expression Pattern of FGFR1, FGFR2, RIP5, and HIP2 in Developing and Postnatal Kidneys of Dab1^{-/-} (yotari) Mice. Int J Mol Sci. 2022 Feb 11;23(4):2025. doi:10.3390/ijms23042025. - Kelam N, Racetin A, Polovic M, Benzon B, Ogorevc M, Vukojevic K, Durdov MG, Huljev AD, Prusac IK, Caric D, Raguz F, Kostic S. Aberrations in FGFR1, FGFR2, and RIP5 Expression in Human Congenital Anomalies of the Kidney and Urinary Tract (CAKUT). Int. J. Mol. Sci. 2022, 23, 15537. https://doi.org/10.3390/ijms232415537. - Kunac N, Filipović N, Kostić S, Vukojević K. The Expression Pattern of Bcl-2 and Bax in the Tumor and Stromal Cells in Colorectal Carcinoma. Medicina (Kaunas). 2022 Aug 21;58(8):1135. doi: 10.3390/medicina58081135.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	<ul style="list-style-type: none"> - Cikes M, Vrdoljak L, Buljan I, Mudnic I, Vukojevic K, Medvedec Mikic I, Kostic S. Students' Practices and Knowledge on Antimicrobial Usage and Resistance in Split, Croatia: The Education of Future Prescribers. Microb Drug Resist. 2019. doi: 10.1089/mdr.2019.0238
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ul style="list-style-type: none"> - 2021-2022 – Communication skills for students of vocational schools for medical professions: Design thinking for participatory medicine (DesignCARE); Grant agreement: br. 2021-1-HR01-KA220-VET-000025725.

	<ul style="list-style-type: none"> - 2017- 2021 HRZZ („Karakterizacija kandidat gena za kongenitalne anomalije bubrega i urotrakta tijekom razvoja u miša i čovjeka - 2019-2022 Erasmus+ (Personalized Medicine Inquiry-Based Education „PROMISE“, Europska komisija, - 2021-2023 Erasmus+: (KA2); Integration of transversal skills into healthcare and social care higher education and curriculum; ITSHEC. - 2014 - 2017 HRZZ "Treating neuropathic pain with dorsal root ganglion stimulation – NeuroMod"
<p>Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?</p>	<ul style="list-style-type: none"> - Course “Skills for medical education and scientific work” - 2022-2023 “Communication skills for students of vocational schools for medical professions: Design thinking for participatory medicine (DesignCARE)”; Erasmus+:KA2, Project leader - 2019-2022 „Personalized Medicine Inquiry-Based Education (PROMISE)“ Erasmus+:KA2 - Cooperation for innovation and the exchange of good practices,KA203 - Strategic Partnerships for higher education, Project coordinator for MEFST - 2021-2023 Erasmus+: (KA2); Integration of transversal skills into healthcare and social care higher education and curriculum; ITSHEC, Erasmus+ K2)
PRIZES AND AWARDS	
<p>Prizes and awards for teaching and research</p>	<ul style="list-style-type: none"> - 3rd place at Symposium of Young Scientists, January 26th 2011 - The Award for Excellence in Teaching (Histology and embryology teaching, academic year 2012/2013), 2014

Title, name and last name of the course leader	Asoc. Prof. Lea Kukoč Modun
Title of the course at the proposed study programme	Analytical Chemistry I, Analytical Chemistry II, Instrumental Methods of Analysis in Pharmacy, Kinetic Methods of Analysis of Pharmaceutical Preparations
GENERAL INFORMATION ON COURSE LEADER	
Address	Poljička cesta 28 A, 21000 Split
Telephone number	098 706 693
E-mail address	kukoc@ktf-split.hr
Personal web page	https://www.bib.irb.hr/pregled/profil/21912
Year of birth	1977.
Scientist ID	250621
CROSBİ profile ID	21912
Research rank and date of the last appointment	Senior scientific associate, 15.03.2021.
Research and teaching or teaching rank, and the date of the last appointment	Associated Professor, 17.12.2021.
Area and field of appointment into research rank	Natural sciences, chemistry, analytical chemistry
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of chemistry and technology
Date of employment	02.06.2002.
Job title (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	analytical chemistry
Position in the institution	///
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Ph:D.
Institution	Faculty of Chemical Engineering and Technology
Place	Zagreb
Date	16.10.2009.
INFORMATION ON ADDITIONAL TRAINING	
Year	2004.
Place	Monza, Italy
Institution	Centar Perkin-Elmer
Field of training	Atomic absorption spectrometry
Year	2005.
Place	Graz, Austria
Institution	Karl-Franzens Universitat
Field of training	Electroanalytical methods
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German, 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it	<ol style="list-style-type: none"> Analytical chemistry I, Undergraduate Study, Chemistry Analytical chemistry II Undergraduate Study, Chemistry

is/was held, and level of study programme)	<ol style="list-style-type: none"> 3. Instrumental methods of analysis Undergraduate Study, Chemistry, Graduate Study, Chemical technology 4. Analytical chemistry I, Study of Pharmacy 5. Analytical chemistry II, Study of Pharmacy 6. Instrumental methods of analysis in pharmacy, Study of Pharmacy 7. Continuous-flow analytical systems with electroanalytical and spectrometric detectors, Postgraduate University (Doctoral) Study of Chemistry of the Mediterranean Environment
Authorship of university textbooks from the field of the course	<ol style="list-style-type: none"> 1. Radić, Njegomir; Kukoč Modun, Lea; Introduction to Analytical Chemistry Školska knjiga, Zagreb, 2016. 2. Radić, Njegomir; Kukoč Modun, Lea; Introduction to Analytical Chemistry Part I ; Split : Redak, 2013 3. Radić, Njegomir; Kukoč Modun, Lea; Kinetic Methods of Analysis with Potentiometric and Spectrophotometric Detectors – Our Laboratory Experiences // Analytical Chemistry / Ira S. Krull (ur.); Rijeka : InTech, 2012. Str. 73-92.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Kukoc-Modun L.; Kraljević T., Tsikas D.; Radić Nj.; Modun D.; Determination of N-Acetyl-L-cysteine Ethyl Ester (NACET) by Flow Injection Analysis and Spectrophotometric Detection Using Different Thiol-Sensitive Ligands // Molecules, 26 (2021), 22; 6826, 9 doi:10.3390/molecules26226826 2. Kukoč Modun L.; Biočić M.; Radić Nj., Determination of penicillamine, tiopronin and glutathione in pharmaceutical formulations by kinetic spectrophotometry // Acta pharmaceutica, 71 (2021), 4; 619-630 doi:10.2478/acph-2021-0038 3. Kukoč Modun L.; Biočić M.; Radić Nj., Flow-injection Determination of Glutathione, Penicillamine and Tiopronin Based on the Reduction of Copper(II)-neocuproine Reagent // Croatica chemica acta (2020) doi:10.5562/cca3688 4. Tsikas D.; Schwedhelma K.; Surdacki A.; Giustarini D.; Rossi R.; Kukoc-Modun L.; Kedia G.; Ückert S., S-Nitroso-N-acetyl-L-cysteine ethyl ester (SNACET) and N-acetyl-L-cysteine ethyl ester (NACET) – Cysteine-based drug candidates with unique pharmacological profiles for oral use as NO, H₂S and GSH suppliers and as antioxidants: Results and overview // Journal of Pharmaceutical Analysis, 8 (2018), 1; 1-9 doi:10.1016/j.jpha.2017.12.003 5. Kukoc-Modun L.; Tsikas D.; Kraljević T.; Biocic M.; Radić Nj., Kinetic Spectrophotometric Determination of N-Acetyl-L-cysteine Ethyl Ester (NACET) Generating Chromogenic Copper(I) Complexes with Different Ligands // Croatica chemica acta, 90 (2017), 2; 263-271 doi:10.5562/cca3135
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried	Project BioSMe "Plants as a source of bioactive sulphur compounds and their ability to hyperaccumulate metals" is funded by the Croatian Science Foundation under number

out in the last five years (max 5 references)	IP-2016-06-1316; from March, 1st 2017. till February, 28th 2021. Project Manager: PhD Ivica Blažević, Associate Professor
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	University Educational Course of Educators, gained knowledge from the following areas of education: methods of teaching, team learning, PBL, Microteaching, Communication skills, Searching of scientific databases.
PRIZES AND AWARDS	
Prizes and awards for teaching and research	Award for the Hot article in journal Analytical Sciences: "Kinetic Spectrophotometric Determination of N-acetyl-L-cysteine Based on Coupled Redox-Complexation Reaction"

Title, name and last name of the course leader	Prof. Nenad Kuzmanić
Title of the course at the proposed study programme	Operations in Pharmaceutical Technology
GENERAL INFORMATION ON COURSE LEADER	
Address	Ostravska 4, 21000 Split
Telephone number	++385 21 329 468
E-mail address	kuzmanic@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/obavijesti-2/obavijesti-poslijediplomski-studij/172-djelatnici/cv/193-cv65
Year of birth	1959.
Scientist ID	120556
CROSBİ profile ID	11883
Research rank and date of the last appointment	Scientific Adviser - March 27th, 2007
Research and teaching or teaching rank, and the date of the last appointment	Full Professor (permanent position) - June 17th, 2012
Area and field of appointment into research rank	Area - Technical Sciences; Field - Chemical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology, University of Split
Date of employment	December 1st, 1984
Job title (professor, researcher, associate teacher, etc.)	Full Professor
Field of research	Mechanical, thermal and separation processes
Position in the institution	
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of Chemistry and Technology, University of Split
Place	Split
Date	December 28th, 1995
INFORMATION ON ADDITIONAL TRAINING	
Year	2000. - 2001.
Place	Rolla, Missouri, USA
Institution	University of Missouri - Rolla, Department of Chemical Engineering,
Field of training	Mechanical, thermal and separation processes in chemical engineering
Year	1991. - 1992.
Place	Torino, Italija
Institution	Politecnico di Torino, Dipartimento di Scienza dei Materiali e Ingegneria Chimica.
Field of training	Mechanical, thermal and separation processes in chemical engineering
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (5)
COMPETENCES FOR THE COURSE	

Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Transport phenomena, Undergraduated study of Chemical Technology, Faculty of Chemistry and Technology, University of Split Material and energy balances, Undergraduated study of Chemical Technology, Faculty of Chemistry and Technology, University of Split Introduction to chemical engineering, Undergraduated study of Chemistry, Faculty of Chemistry and Technology, University of Split Mechanical and heating operations, Graduated study of Chemical Technology, Faculty of Chemistry and Technology, University of Split Environmental engineering, Graduated study of Chemical Technology, Faculty of Chemistry and Technology, University of Split
Authorship of university textbooks from the field of the course	N. Kuzmanić, A. Čelan, <u>Prijenos tvari i energije - Priručnik za laboratorijske vježbe</u> , Kemijsko-tehnološki fakultet, Split, 2021. N. Kuzmanić, <u>Osnove kemijskog inženjerstva - Priručnik za laboratorijske vježbe</u> , Kemijsko-tehnološki fakultet, Split, 2018. N. Kuzmanić, M. Čosić, A. Čelan, <u>Operacije farmaceutske, Prijenos - Priručnik za laboratorijske vježbe</u> , Kemijsko-tehnološki fakultet, Split, 2018.
Professional and research papers published in the last five years from the field of the course (max 5 references)	Čelan, Antonija; Milanović, Iris; Čosić, Marija; Kuzmanić, Nenad, Impact of ultrasound amplitude on crystallization of borax decahydrate in stirred batch crystallizer, <i>Chemical engineering & technology</i> , 44 (2021), 11; 2100-2108. doi:10.1002/ceat.202100275 Čelan, Antonija; Čosić, Marija; Penga, Željko; Kuzmanić, Nenad, Connection of hydrodynamics and nucleation kinetics in dual impeller crystallizer, <i>Chemical engineering & technology</i> , 44 (2021), (6); 1033-1042. doi:10.1002/ceat.202000515 Svilović, Sandra; Rušić, Davor; Stipišić, Renato; Kuzmanić, Nenad, Process optimization for copper sorption onto synthetic zeolite NaX, <i>Bulgarian Chemical Communications</i> , 52 (2020), 2; 189-196. doi:10.34049/bcc.52.2.4620 Čosić, Marija; Pažin, Anđela; Čelan, Antonija; Kuzmanić, Nenad, Influence of Cooling Rate on Crystallization of Borax in Stirred Batch Crystallizer, <i>Chemical Engineering Transactions</i> , 74 (2019), 451-456. doi:10.3303/CET1974076 Čosić, Marija; Čelan, Antonija; Pehnec, Igor; Kuzmanić, Nenad, Investigation of crystal growth of borax in single and dual impeller batch cooling crystallizer, <i>Chemical engineering communications</i> , 207 (2019), 6; 847-860. doi:10.1080/00986445.2019.1630392
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	Impact of processing conditions on kinetics of heterogeneous systems in agitated batch reactors, financed by Croatian Science Foundation in period 2014.- 2018. (Principal Investigator)
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	

PRIZES AND AWARDS	
Prizes and awards for teaching and research	Acknowledgment for scientific collaboration, University of Missouri - Rolla, Rolla, Missouri, USA, 2001.

Title, name and last name of the course leader	Asst. Prof. Dario Leskur
Title of the course at the proposed study programme	Pharmaceutical Chemistry I, Pharmaceutical Chemistry II, Cosmetology, Production of Pharmaceutical Formulations
GENERAL INFORMATION ON COURSE LEADER	
Address	Strmi put 11
Telephone number	+385 21 557851
E-mail address	dario.leskur@mefst.hr
Personal web page	
Year of birth	1991.
Scientist ID	362105
CROSBİ profile ID	34150
Research rank and date of the last appointment	research associate, 3.3.2021.
Research and teaching or teaching rank, and the date of the last appointment	assistant professor, 10.11.2021.
Area and field of appointment into research rank	Pharmacy
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	07.06.2016.
Job title (professor, researcher, associate teacher, etc.)	professor and researcher
Field of research	pharmacy
Position in the institution	assistant professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	Split
Date	23.10.2020.
INFORMATION ON ADDITIONAL TRAINING	
Year	2019.
Place	Belgrade, Serbia
Institution	University of Belgrade Faculty of Pharmacy
Field of training	dermatopharmacokinetics and pharmaceutical technology
Year	2017.
Place	Kuopio, Finland
Institution	University of Eastern Finland, Faculty of Health Sciences
Field of training	<i>in vitro</i> drug metabolism
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	not applicable

Authorship of university textbooks from the field of the course	Rušić D, Bukić J, editors. Priručnik za stručno osposobljavanje: studenti. Split. University of Split.; 2020.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Leskur D, Bukić J, Petrić A, Zekan L, Rušić D, Šešelja Perišin A, Petrić I, Stipić M, Puizina-Ivić N, Modun D. Anatomical Site Differences of Sodium Laurylsulphate Induced Irritation: randomised controlled trial. <i>Br J Dermatol</i>, 2019, doi: 10.1111/bjd.17633 2. Leskur D, Perišić I, Romac K, Šušak H, Šešelja Perišin A, Bukić J, Rušić D, Kladar N, Božin B, Modun D. Comparison of mechanical, chemical and physical human models of in vivo skin damage: Randomized controlled trial. <i>Skin Res Technol</i>. 2020, doi: 10.1111/srt.12932 3. Bukic J, Rusic D, Mas P, Karabatic D, Bozic J, Seselja Perisin, A, Leskur D, Krnic D, Tomic S, Modun D. Analysis of spontaneous reporting of suspected adverse drug reactions for non analgesic over-the-counter drugs from 2008 to 2017. <i>BMC Pharmacol Toxicol</i>, 2019, 20:60., doi: 10.1186/s40360-019-0338-2. 4. Rusic D, Bozic J, Bukic J, Seselja Perisin A, Leskur D, Modun D, Tomic S. Evaluation of accordance of antibiotics package size with recommended treatment duration of guidelines for sore throat and urinary tract infections. <i>Antimicrob Resist Infect Control</i>, 2019 5. Jukic I, Rusic D, Vukovic J, Zivkovic PM, Bukic J, Leskur D, Seselja Perisin A, Luksic M, Modun D. Correlation of registered drug packs with Maastricht V/Florence Consensus Report and national treatment guidelines for management of Helicobacter pylori infection. <i>Basic Clin Pharmacol Toxicol</i>, 2019, doi: 10.1111/bcpt.13322
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. Bukić J, Rušić D, Šešelja Perišin A, Leskur D, Meštrović A, Modun D. Razvoj i implementacija objektivno strukturiranog kliničkog ispita na Studiju farmacije u Splitu. <i>Farm glas</i>, 74, 2018, 2, 97-108 2. Seselja Perisin A, Mestrovic A, Bozic J, Kacic J, Bukic J, Leskur D, Rusic D, Zekan L, Stipic M, Modun D. Interprofessional pharmacotherapy workshop: intervention to improve health professionals' and students' attitudes towards collaboration between physicians and pharmacists. <i>J Interprof Care</i>, 2019, 33:456-463 3. Zekan L, Mestrovic A, Seselja Perisin A, Bukic J, Leskur D, Rusic D, Modun D. Improving community pharmacists' clinical knowledge to detect and resolve drug-related problems in Croatia: a before/after survey study investigating the efficacy of an educational intervention. <i>BMJ Open</i>. 2020
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. 2017.-2018. Clinical efficacy of topical sea mineral preparations” Financed by: Split-Dalmatia county 2. 2016.-2017. Development of pharmaceutical sea mineral preparations for topical use Financed by: Split-Dalmatia county 3. 2021. – 2024 <i>Innovating quality assessment tools for pharmacy studies in Bosnia and Herzegovina</i> (IQPharm). Financed by: ERASMUS+ program EU 4. 2019. – 2022. „Primjena HKO-a u unapređenju studijskih programa u području farmacije i medicinske biokemije”, poziv Provedba HKO-a na razini visokog obrazovanja Financed by: European social fund - EU

Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Course Vještine medicinske edukacije i znanstvenog rada
PRIZES AND AWARDS	
Prizes and awards for teaching and research	Award to the first author of the best research paper in field of Pharmacy for the academic year 2018/19

Title, name and last name of the course leader	Prof.cin. Hrvoje Ljubičić
Title of the course at the proposed study programme	Physical Education and Sports I-II
GENERAL INFORMATION ON COURSE LEADER	
Address	Mosečka 93b
Telephone number	0916097979
E-mail address	hljubici@mefst.hr
Personal web page	
Year of birth	1982.
Scientist ID	
CROSBİ profile ID	
Research rank and date of the last appointment	
Research and teaching or teaching rank, and the date of the last appointment	Lecturer,2.5.2017.
Area and field of appointment into research rank	Physical education
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	School of Medicine, University of Split
Date of employment	1.6.2017.
Job title (professor, researcher, associate teacher, etc.)	lecturer
Field of research	Physical education
Position in the institution	Course leader
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	lecturer
Institution	School of Medicine, University of Split
Place	Split
Date	2.5.2017.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Graduate education Physical education I and II on English studies of School of Medicine, Split Elective courses Sport and health, Sport and steroid abuse, School of Medicine Split
Authorship of university textbooks from the field of the course	
Professional and research papers	1. Influence of some motor abilities and morphological characteristics on the result in throwing and jumping

published in the last five years from the field of the course (max 5 references)	<p>disciplines in female cadets. Pavić D, Ljubičić H, Zagorac N, Čavala M, Jukić J. Proceedings of the International Scientific Conference "Effects of Physical Activity on the Anthropological Status of Children, Youth and Adults", March 2017.</p> <p>2. Influence of some morphological characteristics on the result in 60 m running in female cadets. Zednik M, Zagorac N, Čavala M, Ljubičić H, Saratlija P., Proceedings of the International Scientific Conference "Effects of Physical Activity on the Anthropological Status of Children, Youth and Adults", March 2017.</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Faculty of Kinesiology Split
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Asoc. Prof. Snježana Mardešić
Title of the course at the proposed study programme	Sports and Steroids, Medically Assisted Fertilization
GENERAL INFORMATION ON COURSE LEADER	
Address	Mosečka 93b, 21000 Split
Telephone number	021-557-804
E-mail address	smardesi@mefst.hr
Personal web page	/
Year of birth	1979.
Scientist ID	307826
CROSBİ profile ID	33521
Research rank and date of the last appointment	Senior research associate – 13. 11. 2018.
Research and teaching or teaching rank, and the date of the last appointment	Associate professor of Histology and Embryology- 1. 4. 2019.
Area and field of appointment into research rank	Biomedicine and Health, Basic sciences, Cytology, Histology and Embryology
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	School of Medicine, University of Split
Date of employment	1.07.2008.
Job title (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Human embryology and histology
Position in the institution	Head of Histology and Embryology Department, School of Medicine, University of Split
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Doctor of Philosophy
Institution	School of Medicine, University of Split
Place	Split, Croatia
Date	10.2.2012.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English-Excellent
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German-Good
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	- <i>Graduate education:</i> Histology and Embryology (School of Medicine in Split and Mostar). - Embryology and Histology, Department of Health Studies, University of Split

	<p>Laboratory histopathologic technics, Department of Health Studies, University of Split</p> <p>- Elective courses “Development and anomalies of head and neck”, “Test tube baby”, “The secrets of human development”, “Sport and steroid abuse”</p> <p>- e-teaching: Elective course “Development and anomalies of the head and neck”</p> <p>- <i>Postgraduate teaching-</i> Postgraduate study Biology of the neoplasm, School of Medicine in Split: Elective course “Human embryo: development, anomalies and tumors”, “Development, anomalies and tumors of the head and neck”</p>
<p>Authorship of university textbooks from the field of the course</p>	<p>Saraga-Babić M, Puljak L, Mardešić S, Kostić S, Sapunar D. “Human Embryology and Histology”, University of Split, 2015. Glavina Durdov M, Bedrina K, Mardešić S . Laboratory histopathologic technics Redak, Split. 2015.</p>
<p>Professional and research papers published in the last five years from the field of the course (max 5 references)</p>	<ol style="list-style-type: none"> 1. Solic, I.; Racetina, A.; Filipovic, N.; Mardesic, S.; Bocina, I.; Galesic-Ljubanovic, D.; Glavina Durdov, M.; Saraga-Babic, M.; Vukojevic, K. Expression Pattern of α-Tubulin, Inversin and Its Target Dishevelled-1 and Morphology of Primary Cilia in Normal Human Kidney Development and Diseases. International Journal of Molecular Science 22 (7), 2021. 2. Boric, K.; Mardesic, S.; Martinovic Kaliterna, D.; Radic, M.; Tadin Hadjina, I.; Vukojevic, K.; Kosovic, I.; Solic, I.; Zekic Tomas, S.; Saraga-Babic, M.Expression of apoptotic and proliferation factors in gastric mucosa of patients with systemic sclerosis correlates with form of the disease. Scientific Reports 9 (1), 2019. 3. Racetin A, Raguž F, Durdov MG, Kunac N, Saraga M, Sanna-Cherchi S, Šoljić V, Martinović V, Petričević J, Kostić S, Mardešić S, Tomaš SZ, Kablar B, Restović I, Lozić M, Filipović N, Saraga-Babić M, Vukojević K. Immunohistochemical expression pattern of RIP5, FGFR1, FGFR2 and HIP2 in the normal human kidney development. Acta Histochem.;121(5):531-538, 2019. 4. Bečić T, Bilan K, Mardešić S, Vukojević K, Saraga-Babić M. Growth factors FGF8 and FGF2 and their receptor FGFR1, transcriptional factors Msx-1 and MSX-2, and apoptotic factors p19 and RIP5 participate in the early human limb development Acta Histochem. 120(3):205-214, 2018. 5. Rancic A, Filipovic N, Marin Lovric J, Mardesic S, Saraga-Babic M, Vukojevic K; Neuronal differentiation in the early human retinogenesis. Acta Histochemica 119(3):264-272, 2017.
<p>Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)</p>	

Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>2018. -2023. project participant Characterization of candidate genes in congenital anomalies of the kidney and urinary system (CAKUT) during mouse and human development HRZZ IP-06-2016-2575</p> <p>2020 - 2023 project participant SI4CARE -Social Innovation for integrated health CARE of ageing population in ADRION Regions.</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	<ul style="list-style-type: none"> - Course “Skills for medical education and scientific work”, School of Medicine, University of Split, 2011.
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Prof. Ivana Marinović Terzić
Title of the course at the proposed study programme	Molecular Research in Medicine
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2, Split
Telephone number	021557880
E-mail address	ivana.marinovic.terzic@mefst.hr
Personal web page	http://www.mefst.unist.hr/znanost/istrazivacke-skupine-i-laboratoriji/laboratorij-za-istrazivanje-raka/hrzz_sprtnrep/6250
Year of birth	1973.
Scientist ID	276644
CROSBİ profile ID	22954
Research rank and date of the last appointment	Scientific advisor, 13.02.2019.
Research and teaching or teaching rank, and the date of the last appointment	Full professorship, 13.07.2021.
Area and field of appointment into research rank	Područje: Biomedicina i zdravstvo, Polje: Temeljne medicinske znanosti
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	13.6.2000.
Job title (professor, researcher, associate teacher, etc.)	Full professorship
Field of research	Basic medical sciences; Human genetics, genomics and proteomics
Position in the institution	University professor, Senior researcher
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Medical doctor
Institution	University of Zagreb, School of Medicine
Place	Split
Date	12.07.1999.
INFORMATION ON ADDITIONAL TRAINING	
Year	2008.
Place	Split
Institution	University of Split School of Medicine
Field of training	Doctor of Philosophy
Year	2008. , short fellowship
Place	London, UK
Institution	William Harvey Research Institute, Barts and The London, Queen Mary's School of Medicine and Dentistry
Field of training	Training, Prof. dr. Kit-Yi Leung group
Year	2006 –2007.
Place	San Diego, California
Institution	Moore's Cancer Center, UCSD
Field of training	Postdoc research fellow, Prof. Dr. Jean Y.J. Wang group
Year	2004.
Place	Frankfurt am Main, Germany
Institution	Institute of Biochemistry II, Goethe University School of Medicine
Field of training	Research fellow, Prof.dr. Ivan Đikić group

FURTHER INFORMATION ON ADDITIONAL TRAINING	
WORKSHOP	Microscale thermophoresis workshop, Nanotemper technologies, PMF Zagreb, 2015.
WORKSHOP	Annual flow cytometry Course, Childrens hospital Srebrnjak, Zagreb, 2016.
WORKSHOP	"Hands-on" course in confocal microscopy" –York University, UK, 2018.
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2(sufficient) to 5 (excellent)	English - 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian - 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<ul style="list-style-type: none"> - Head of the Department from 2016 - 2021. - Course leader "Imunologija i medicinska genetika ", study of Medicine, from 2016 to 2021. - Course leader "Immunology and medical genetics" study of Medicine in English, from 2020 - today - Participation in teaching courses in integrated studies of medicine, dental medicine, medicine in English, pharmacy, and in postgraduate studies in Biology of Neoplasms and Evidence Based Medicine.
Authorship of university textbooks from the field of the course	<ol style="list-style-type: none"> 1. Stanićna i molekularna imunologija, 8 izd. Abul K. Abbas, Andrew H. H. Lichtman, Shiv Pillai. Medicinska naklada, Zagreb, 2018. – Chapter translation. 2. Osnovna imunologija, 5 izd., Abul K. Abbas, Andrew H. H. Lichtman, Shiv Pillai. Sveučilište u Splitu, Medicinski fakultet, Split, 2017. – Editor of the edition; several chapters translation. 3. - Emeryjeve osnove medicinske genetike, Peter Turnpenn, Sian Ellard, Medicinska naklada, Zagreb 2011. – Chapter translation.

Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Lopez-Mosqueda J, Maddi K, Prgomet S, Kalayil S, Marinovic-Terzic I, Terzic J, Dikic I. SPRTN is a mammalian DNA-binding metalloprotease that resolves DNA-protein crosslinks. <i>Elife</i>. 2016 Nov 17;5. pii: e21491. doi: 10.7554/eLife.21491. 2. Marinović-Terzić I*, Bogdanović Z*, Kuret S*, Jerončić A*, Bradarić N, Forempoher G, Polašek O, Anđelinović Š, Terzić J. The impact of IL-6 and IL-28B gene polymorphisms on treatment outcome of chronic hepatitis C infection among intravenous drug users in Croatia. <i>PeerJ</i>. 2016 Oct 25;4:e2576. *- equal contribution. 3. Marinović-Terzić I*, Novak I*, Utrobičić I*, Matić K, Lessel D, Salamunić I, Babić MS, Kunac N, Mešin AK, Kubisch C, Maček B, Terzić J. Carpal tunnel syndrome is associated with high fibrinogen and fibrinogen deposits. <i>Neurosurgery</i>. 2014 Sep;75(3):276-85, *-equal contribution. 4. Marinovic-Terzic I*, Lessel D*, Vaz B*, Halder S*, Lockhart PJ*, Lopez-Mosqueda J, et al. Mutations in SPRTN cause early-onset hepatocellular carcinoma, genomic instability and progeroid features. <i>Nat Genet</i>. 2014 Nov;46(11):1239-44
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. 2017.-2022. HRZZ istraživački projekt „Uloga proteina Spartan u DNA replikaciji” IP-2016-06-3097 2. 2018.-2022. HRZZ projekt razvoja karijera mladih istraživača, izobrazba novih doktora znanosti „Uloga proteina Spartan u DNA replikaciji” DOK-2018-01-4568 3. 2019.-2023. HRZZ projekt razvoja karijera mladih istraživača, izobrazba novih doktora znanosti „Uloga proteina Spartan u DNA replikaciji” DOK-2018-09-7169 4. 2017.-2020. Grad Split „Proizvodnja Dizajniranih <i>Ankyrin- Repeat</i> Proteina (DARPin) specifičnih za SPRTN” 5. 2008. - UKF Grant No.32/08, MZOŠ
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	- Within course: „Vještine medicinske edukacije“, University of Split School of Medicine, 2008.
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<ol style="list-style-type: none"> 1. Annual award for the best published research paper, University of Split School of Medicine, 2013/2014. 2. Annual award for the best published research paper, University of Split School of Medicine, 2008/2009. 3. UKF Grant No.32/08, MZOŠ, 2008. 4. The best candidate, Incentive for excellence, Institutional funding, University of Split School of Medicine, MZOS, 2016. 5. The best candidate, Incentive for excellence, Institutional funding, University of Split School of Medicine, MZOS, 2015. 6. Scholarship for talented students, The town of Split, Croatia, 1993. – 1999.

Title, name and last name of the course leader	Prof. Ana Marušić
Title of the course at the proposed study programme	Mathematics and Biostatistics, Scientific Methodology in Pharmacy, Science for Society
GENERAL INFORMATION ON COURSE LEADER	
Address	University of Split School of Medicine, Šoltanska 2, 21000, Split
Telephone number	098 508647, work: 021 558 812
E-mail address	ana.marusic@mefst.hr
Personal web page	http://www.mefst.unist.hr/nastava/katedre/istrazivanja-u-biomedicini-i-zdravstvu/nastavnici-903/prof-ana-marusic-md-phd/9657
Year of birth	1962
Scientist ID	136152
CROSBİ profile ID	12388
Research rank and date of the last appointment	Full tenured professor of Anatomy, since 2008 Scientific advisor, Biomedicine and Health – Public Health, since 2020
Research and teaching or teaching rank, and the date of the last appointment	Full tenured professor, biomedicine and health – basic medical sciences (2008)
Area and field of appointment into research rank	Biomedicine and Health: - Basic Medical Sciences - Public Health
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	2008
Job title (professor, researcher, associate teacher, etc.)	Full tenured professor
Field of research	Anatomy, Public Health
Position in the institution	Chair, Department of Research in Biomedicine and Health
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Doctor of Medicine (MD), Doctor of Medical Sciences (PhD)
Institution	University of Zagreb School of Medicine
Place	Zagreb
Date	1985 MD / 1989 PhD
INFORMATION ON ADDITIONAL TRAINING	
Year	1989-1990
Place	Farmington, CT, USA
Institution	University of Connecticut Health Center Medical School
Field of training	Molecular and cellular biology of bone
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English – excellent (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German – good (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French – sufficient (2)

COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<p>Course „Principles of Research in Medicine“ – creator of the course at the University of Zagreb School of Medicine, 1995</p> <p>Course leader on several courses at the doctoral programme “Translational research in biomedicine”, TRIBE</p> <p>Co-leader of the doctoral course at the Sao Paulo University, Brazil (https://uspdigital.usp.br/janus/Disciplina?sgldis=MCM5917&)</p>
Authorship of university textbooks from the field of the course	<ol style="list-style-type: none"> 1. Marušić A. Poglavlja 14. Znanstvena publikacija, 15. Građa znanstvenog članka, 16. Pisanje znanstvenog članka. U: Marušić M, ur. Uvod u znanstveni rad u medicini, 6. izdanje. Medicinska naklada, Zagreb, 2019. 2. Marušić A. Chapters 14. Scientific Publication, 15. Structure of the Scientific Article, 16. Writing a Scientific Article. U: Marušić M, ur. Principles of Research in Medicine, 2nd ed. Medicinska naklada, Zagreb, 2016. 3. Editor of the translation of the textbook: Ferenczi & Muirhead: One Stop Doc: Statistics and Epidemiology. Zagreb: Medicinska naklada, 2012. 4. Marušić A. Approaches to the detection of research misconduct – The role of the peer review process. In: Wells F, Farthing M, ed. Fraud and Misconduct in Biomedical Research. London: The Royal Society of Medicine Press, 2008. 5. Marušić A, Haug C. The journal editor’s perspective. In: Foote M, ed. Clinical trial registries. A practical guide for sponsors and researchers of medicinal products. Basel: Birkhäuser, 2006.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Jurić Petričević S, Buljan I, Bjelanović D, Mrduljaš-Đujić N, Pekez T, Čurković M, Vojvodić Ž, Pavličević I, Marušić M, Marušić A. Effectiveness of letters to patients with or without Cochrane blogshots on 10-year cardiovascular risk change among women in menopausal transition: 6-month three-arm randomized controlled trial. <i>BMC Med.</i> 2022 Oct 20;20(1):381 2. Tokalić R, Viđak M, Kaknjo MM, Marušić A. Antifragility of healthcare systems in Croatia and Bosnia and Herzegovina: Learning from man-made and natural crises. <i>Lancet Reg Health Eur.</i> 2021 Oct 7;9:100216. 3. Pina DG, Buljan I, Hren D, Marušić A. A retrospective analysis of the peer review of more than 75,000 Marie Curie proposals between 2007 and 2018. <i>Elife.</i> 2021 Jan 13;10:e59338. 4. Mejlgaard N, Bouter LM, Gaskell G, Kavouras P, Allum N, Bendtsen AK, Charitidis CA, Claesen N, Dierickx K, Domaradzka A, Reyes Elizondo A, Foeger N, Hiney M, Kaltenbrunner W, Labib K, Marušić A, Sørensen MP, Ravn T, Ščepanović R, Tijdink JK, Veltri GA. Research integrity: nine ways to move from talk to walk. <i>Nature.</i> 2020 Oct;586(7829):358-360. 5. Buljan I, Garcia-Costa D, Grimaldo F, Squazzoni F, Marušić A. Large-scale language analysis of peer review reports. <i>Elife.</i> 2020 Jul 17;9:e53249.
Professional and research papers in methodology and quality of teaching published in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. Buljan I, Marušić M, Tokalić R, Viđak M, Peričić TP, Hren D, Marušić A. Cognitive levels in testing knowledge in evidence-based medicine: a cross sectional study. <i>BMC Med Educ.</i> 2021 Jan 7;21(1):25. 2. Roguljić M, Peričić TP, Gelemanović A, Jukić A, Šimunović D, Buljan I, Marušić M, Marušić A, Wager E. What Patients, Students and Doctors Think About Permission to Publish Patient Photographs in Academic Journals: A Cross-Sectional Survey in Croatia. <i>Sci Eng</i>

	<p>Ethics. 2019 Sep 20. doi: 10.1007/s11948-019-00134-y. [Epub ahead of print]</p> <p>3. Krnic Martinic M, Meerpohl JJ, von Elm E, Herrle F, Marusic A, Puljak L. Attitudes of editors of core clinical journals about whether systematic reviews are original research: a mixed-methods study. BMJ Open. 2019 Aug 30;9(8):e029704.</p> <p>4. Buljan I, Jerončić A, Malički M, Marušić M, Marušić A. How to choose an evidence-based medicine knowledge test for medical students? Comparison of three knowledge measures. BMC Med Educ. 2018;18:290.</p> <p>5. Banožić A, Buljan I, Malički M, Marušić M, Marušić A. Short- and long-term effects of retrieval practice on learning concepts in evidence-based medicine: Experimental study. J Eval Clin Pract. 2018;24:262-263.</p>
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. Croatian Research Foundation, grant "Professionalism in Health - ProHealth", 2015-2019 2. Croatian Research Foundation, grant „Professionalism in health: Decision-making in practice and research – ProDeM“, since 2020. 3. H2020-SwafS-16-2016 – EnTIRE (Mapping Normative Frameworks for Ethics and Integrity of Research), since 2017. 4. H2020-SwafS-2016-17 – VIRT2UE (Virtue based ethics and Integrity of Research: Train-the-Trainer program for Upholding the principles and practices of the European Code of Conduct for Research Integrity), since 2018. 5. H2020-SwafS-2018-1 – SOPs4RI (Standard Operating Procedures for Research Integrity SOPs4RI), since 2019.
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Courses on Anatomy (since 1986) and Research in biomedicine and Health (since 1995), from instructor to full tenured professor.
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2019: University of Split Award for Research</p> <p>2017: Meritorious Award, Council of Science Editors</p> <p>2006: National Award for Science, Parliament of Croatia</p> <p>2002: Strossmayer's Award, Croatian Academy of Arts and Sciences</p> <p>2001: Strossmayer's Award, Croatian Academy of Arts and Sciences</p> <p>1999: National decoration for contribution to science, Ruđer Bošković Order of Danica Hrvatska</p>

Title, name and last name of the course leader	Lecturer Ante Mihanovic, PhD
Title of the course at the proposed study programme	Pharmaceutical marketing
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2
Telephone number	021 557 800
E-mail address	amihanov@mefst.hr
Personal web page	
Year of birth	1984.
Scientist ID	
CROSBİ profile ID	
Research rank and date of the last appointment	
Research and teaching or teaching rank, and the date of the last appointment	
Area and field of appointment into research rank	
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Split-dalmatia county pharmacies
Date of employment	July 2014.
Job title (professor, researcher, associate teacher, etc.)	Director
Field of research	pharmacy, marketing, communications, management
Position in the institution	Teacher in Pharmaceutical marketing and communications
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Osijek Faculty of Economy
Place	Osijek
Date	11 th January 2019.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it	

is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>1. Influence of variable compensation on business performance of the Split- Dalmatia county pharmacies", Opatija 2015, Interdisciplinary management research XI</p> <p>2. Pharmacy staff norm calculation model based on legality, expertise and profitability on the example of the Split-Dalmatia county pharmacy", Opatija 2017, Interdisciplinary management research XIII</p> <p>3. THE IMPACT OF DEREGULATION AND LIBERALIZATION IN THE PHARMACEUTICAL MARKET IN CROATIA AND POTENTIAL STRATEGIC DIRECTIONS OF DEVELOPMENT, Interdisciplinary management research XV , Opatija 2019; Ekonomski fakultet u Osijeku, (str.998-1012.)</p> <p>4. Seselja Perisin A, Bukic J, Rusic D, Leskur D, Bozic J, Mihanovic A, Vilovic M, Cohadzic T, Modun D. Teaching Pharmacovigilance to Healthcare Students: Identifying Gaps and Opportunities for Improvement. Pharmacy (Basel). 2021;9(3):147.</p> <p>5. Bukic J, Kuzmanic B, Rusic D, Portolan M, Mihanovic A, Seselja Perisin A, Leskur D, Petric A, Bozic J, Tomic S, Modun D. Community pharmacists' use, perception and knowledge on dietary supplements: a cross sectional study. Pharm Pract (Granada). 2021;19(1):2251.</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Prof. Mladen Miloš
Title of the course at the proposed study programme	Physical Biochemistry
GENERAL INFORMATION ON COURSE LEADER	
Address	Ruđera Boškovića 35, 21000 Split
Telephone number	021 329 465
E-mail address	Mladen.Milos@ktf-split.hr
Personal web page	http://bib.irb.hr/lista-radova?autor=211625
Year of birth	1956
Scientist ID	211625
CROSBi profile ID	
Research rank and date of the last appointment	Scientific advisor (15. 02. 2005.)
Research and teaching or teaching rank, and the date of the last appointment	Full professor (18. 01. 2010.)
Area and field of appointment into research rank	Sciences, Chemistry, Biochemistry and medicinal chemistry
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of chemistry and technology
Date of employment	1. October 1993
Job title (professor, researcher, associate teacher, etc.)	professor
Field of research	Biochemistry
Position in the institution	-
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Ph.D.
Institution	Faculty of Sciences
Place	Geneva
Date	13. July 1989
INFORMATION ON ADDITIONAL TRAINING	
Year	2002
Place	Marseille
Institution	University of Provence
Field of training	Natural products
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (2)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Basics of biochemistry (Professional study of chemical technology), Biochemistry I and II (University undergraduate study of chemistry), Physical biochemistry (University graduate study of chemistry and Integrated undergraduate and graduate study of Pharmacy). Cellular signaling (Postgraduate study).

Authorship of university textbooks from the field of the course	Lectures of Basic biochemistry
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Herenda S; Ostojic J; Milos M; Haskovic E; Haskovic D; Deljkic E, The Effect of ACE Inhibitor (perindopril) on Peroxidase Activity in vitro Conditions, <i>International Journal of Electrochemical Science</i> 14 (2019) 10130-10138 2. Marasovic M; Ivankovic S; Stojkovic R; Djermic D; Galic B; Milos M, In vitro and in vivo antitumour effects of phenylboronic acid against mouse mammary adenocarcinoma 4T1 and squamous carcinoma SCCVII cells, <i>Journal of enzyme inhibition and medicinal chemistry</i>, 32 (2017) 1299-1304 3. Ostojic J; Herenda S; Besic Z; Milos M; Galic B, Advantages of an Electrochemical Method Compared to the Spectrophotometric Kinetic Study of Peroxidase Inhibition by Boroxine Derivative // <i>Molecules</i>, 22 (2017) 1120-1129 4. Pojskic L; Haveric S; Lojo-Kadric N; Hadzic M; Haveric A; Galic Z; Galic B; Vullo D; Supuran CT, Milos M, Effects of dipotassium- trioxohydroxytetrafluorotriborate, $K_2[B_3O_3F_4OH]$, on cell viability and gene expression of common human cancer drug targets in a melanoma cell line, <i>Journal of enzyme inhibition and medicinal chemistry</i>, 31 (2016) 999-1004 5. Ivankovic S; Stojkovic R; Maksimovic M; Galic B; Milos M, Impact of calcium ion on cytotoxic effect of the boroxine derivative, $K_2[B_3O_3F_4OH]$ // <i>Journal of enzyme inhibition and medicinal chemistry</i>, 31 (2016) 70-74
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	-
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	HRZZ project "Research of bioactive compounds from Dalmatian plants: their antioxidant character and impact on enzyme inhibition and health"
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	University undergraduate study of chemistry University graduate study of chemistry Integrated undergraduate and graduate study of Pharmacy Professional study of chemical technology, Postgraduate study of chemistry of the Mediterranean environment
PRIZES AND AWARDS	
Prizes and awards for teaching and research	Award of Faculty of chemistry and technology in Split

Title, name and last name of the course leader	Prof. Darko Modun
Title of the course at the proposed study programme	Pharmacokinetics, Pharmacology, Professional Practice, Professional Traineeship, Social Pharmacy
GENERAL INFORMATION ON COURSE LEADER	
Address	Poljička cesta 28A, 21000 Split
Telephone number	0038598892373
E-mail address	darko.modun@mefst.hr
Personal web page	https://www.bib.irb.hr/pregled/profil/21240
Year of birth	1975.
Scientist ID	243656
CROSBi profile ID	21240
Research rank and date of the last appointment	Scientific advisor tenure, 10. 07. 2019.
Research and teaching or teaching rank, and the date of the last appointment	Full professor tenure, 28. 10. 2021.
Area and field of appointment into research rank	Biomedicine & Health, Basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	10/1999 -
Job title (professor, researcher, associate teacher, etc.)	Full professor tenure
Field of research	Pharmacology, Pharmacy
Position in the institution	Vice-Dean, Head of Department
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	21000 Split
Date	20.10.2006.
INFORMATION ON ADDITIONAL TRAINING	
Year	2009.
Place	Hannover, Germany
Institution	Hannover Medical Faculty
Field of training	Detection of nitrite (metabolite of NO) in blood and plasma
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	General pharmacology, Special Pharmacology I, Special Pharmacology II, integrated undergraduate and graduate study of Pharmacy in Split
Authorship of university textbooks from the field of the course	1. Basic and Clinical Pharmacology 14th ed. (Temeljna i klinička farmakologija) (translator of a chapter) Zagreb : Medicinska naklada (ed.), 2020.

	<ol style="list-style-type: none"> 2. Handbook of virtual experiments in Pharmacology (Priručnik o virtualnim pokusima iz farmakologije) (co-editor and co-author). Split : University of Split School of Medicine (ed.), 2013. 3. Basic and Clinical Pharmacology 11th ed. (Temeljna i klinička farmakologija) (translator of a chapter) Zagreb : Medicinska naklada (ed.), 2011. 4. Handbook of Pharmacology (Farmakološki priručnik) (co-author). Zagreb : Medicinska naklada, (ed.), 2008.
<p>Professional and research papers published in the last five years from the field of the course (max 5 references)</p>	<ol style="list-style-type: none"> 1. Zekan, L., Mestrovic, A., Seselja Perisin, A., Portolan, M., Jambrek, N., Jager, S., Sepetavc, M., Modun, D. Clinical knowledge of community pharmacists in Croatia for detecting drug-related problems (2017) <i>International Journal of Clinical Pharmacy</i>, 39 (6), pp. 1171-1174. 2. Rusic, D., Bozic, J., Bukic, J., Seselja Perisin, A., Leskur, D., Modun, D., Tomic, S. Evaluation of accordance of antibiotics package size with recommended treatment duration of guidelines for sore throat and urinary tract infections (2019) <i>Antimicrobial Resistance and Infection Control</i>, 8 (1), art. no. 30. 3. Bukic, J., Rusic, D., Mas, P., Karabatic, D., Bozic, J., Seselja Perisin, A., Leskur, D., Krnic, D., Tomic, S., Modun, D. Analysis of spontaneous reporting of suspected adverse drug reactions for non-analgesic over-the-counter drugs from 2008 to 2017 (2019) <i>BMC Pharmacology and Toxicology</i>, 20 (1), art. no. 60. 4. Jukic, I., Rusic, D., Vukovic, J., Zivkovic, P.M., Bukic, J., Leskur, D., Seselja Perisin, A., Luksic, M., Modun, D. Correlation of registered drug packs with Maastricht V/Florence Consensus Report and national treatment guidelines for management of Helicobacter pylori infection (2020) <i>Basic and Clinical Pharmacology and Toxicology</i>, 126 (3), pp. 212-225. 5. Rusic, D., Bukić, J., Seselja Perisin, A., Leskur, D., Modun, D., Petric, A., Vilovic, M., Bozic, J. Are we making the most of community pharmacies? Implementation of antimicrobial stewardship measures in community pharmacies: A narrative review (2021) <i>Antibiotics</i>, 10 (1), art. no. 63, pp. 1-14.
<p>Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)</p>	<ol style="list-style-type: none"> 1. Seselja Perisin A, Bukic J, Rusic D, Leskur D, Bozic J, Mihanovic A, Vilovic M, Cohadzic T, Modun D. Teaching Pharmacovigilance to Healthcare Students: Identifying Gaps and Opportunities for Improvement (2021) <i>Pharmacy (Basel)</i>, 9(3):147. 2. Zekan L, Mestrovic A, Seselja Perisin A, Bukic J, Leskur D, Rusic D, Modun D. Improving community pharmacists' clinical knowledge to detect and resolve drug-related problems in Croatia: a before/after survey study investigating the efficacy of an educational intervention (2020) <i>BMJ Open</i>, 10(6):e034674. 3. Seselja Perisin A, Mestrovic A, Bozic J, Kacic J, Bukic J, Leskur D, Rusic D, Zekan L, Stipic M, Modun D. Interprofessional pharmacotherapy workshop: intervention to improve health professionals' and students' attitudes towards collaboration between physicians and pharmacists (2019) <i>Journal of Interprofessional Care</i>, 33:pp 456-63.

	<p>4. Bukić J, Rušić D, Šešelja Perišin A, Leskur D, Meštrović A, Modun D. Razvoj i implementacija objektivno strukturiranog kliničkog ispita na Studiju farmacije u Splitu. (Development and implementation of objective structured clinical examination (OSCE) at the Split School of Medicine pharmacy studies). <i>Farmaceutski glasnik</i> (2018) 74, 2:pp 97-108.</p>
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>1. 2016. – 2017. Principal investigator of the project „Development of pharmaceutical formulations of „Sea oil“ for topical application on the skin“, by the Split-Dalmatia County fund for Technical research, development and innovation (Contract No: 201600115185).</p> <p>2. 2017. – 2018. Principal investigator of the project „Investigation of clinical efficacy of pharmaceutical formulations of Sea oil, by the Split-Dalmatia County fund for Technical research, development and innovation (Contract No: 201700157267).</p> <p>3. 2018. – 2019. Investigator of the project „Internationalization of study programs at the Medical faculty in Split“, European Social Fund, call Internationalization of high education (Contract No: UP.03.1.1.02.0035).</p> <p>4. 2019. – 2022. Investigator of the project „Application of Croatian Qualification framework in improving the Study program of Pharmacy and Medical biochemistry“, European Social Fund, call poziv Application of Croatian Qualification framework in high education (Contract No: UP.03.1.1.03.0021).</p> <p>5. 2019. – 2022. Investigator of the project “Digitalization and improvement of nutrition care of patients with chronic diseases” Operational Programme Competitiveness and Cohesion (Contract No: KK.01.1.1.04.0115).</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Medical education competences“ course at Medical Faculty University of Split
PRIZES AND AWARDS	
Prizes and awards for teaching and research	Award of the University of Split School of Medicine for the first author of the best scientific article published in acad. year 2005/06.

Title, name and last name of the course leader	Assoc. Prof. Ivana Mudnić
Title of the course at the proposed study programme	Clinical Pharmacology and Pharmacoeconomics
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2, 21000 Split
Telephone number	+385 99 218 2189
E-mail address	ivana.mudnic@mefst.hr
Personal web page	
Year of birth	1976.
Scientist ID	276760
CROSBİ profile ID	23213
Research rank and date of the last appointment	Senior Research Fellow, December 6, 2017
Research and teaching or teaching rank, and the date of the last appointment	Associate Professor, March 26, 2019
Area and field of appointment into research rank	Biomedicine and health, basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	2001
Job title (professor, researcher, associate teacher, etc.)	Professor
Field of research	Pharmacology
Position in the institution	Head of the Department of Pharmacology
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Ph.D.
Institution	University of Split, School of Medicine
Place	Split
Date	April 20, 2012
INFORMATION ON ADDITIONAL TRAINING	
Year	2002, 2005
Place	Ljubljana
Institution	Institute of Pharmacology and Experimental Toxicology University of Ljubljana School of Medicine
Field of training	Cardiovascular pharmacology (the isolated organs)
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Principal teacher of several courses in the field of pharmacology for students of medicine, pharmacy, dental medicine, health studies, at undergraduate, graduate, and postgraduate level.
Authorship of university textbooks from the field of the course	Co-author of the chapters within textbooks: 1. Bradamante V, Klarica M, Šalković-Petrišić M. ed. Farmakološki priručnik. Zagreb: Medicinska naklada; 2008:

	<p>- Modun D, Mudnić I, Boban M. Utjecaj lijekova na značajke akcijskog potencijala u izoliranom srcu, p.72-76.</p> <p>- Mudnić I, Brizić I, Boban M. Mehanizmi vazodilacijskog učinka lijekova: model izoliranih vaskularnih prstenova štakorske aorte, p.76-80.</p> <p>2. Modun D, Bach-Rojecky L. ed. Priručnik o virtualnim pokusima iz farmakologije Split: Medicinski fakultet Sveučilišta u Splitu; 2013:</p> <p>- Modun D, Mudnić I. Budimir D, Šešelja Perišin A. Modul farmakokinetika (Kinetics), p. 53-108.</p> <p>Translator of the chapters within textbook: Katzung BG, Masters SM, Trevor AJ, ed; Trkulja V, Klarica M, Šalković Petrišić M, ed. Temeljna i klinička farmakologija. Zagreb: Medicinska naklada; 2020:</p> <p>- Mudnić I. Vazodilatatori i liječenje angine pectoris, p. 194-211.</p> <p>- Mudnić I, Budimir Mršić D. Lijekovi u liječenju srčanog zatajenja, p. 212-227.</p>
<p>Professional and research papers published in the last five years from the field of the course (max 5 references)</p>	<p>1. Nazić J, Jurić D, Mudnić I, Boban Z, Dželalija A, Tandara L, Šupe-Domić D, Gugo K, Boban M. Effects of Moderate Consumption of Red Wine on Hepcidin Levels in Patients with Type 2 Diabetes Mellitus. <i>Foods</i>. 2022;11(13):1881.</p> <p>2. Boban N, Tonkić M, Grga M, Milat AM, Mudnić I, Boban M. Antimicrobial activity of wine in relation to bacterial resistance to medicinal antibiotics. <i>Oeno One</i>. 2021;55(1):45-48.</p> <p>3. Zivkovic PM, Matetic A, Tadin Hadjina I, Rusic D, Vilovic M, Supe-Domic D, Borovac JA, Mudnic I, Tonkic A, Bozic J. Serum Catestatin Levels and Arterial Stiffness Parameters Are Increased in Patients with Inflammatory Bowel Disease. <i>Journal of Clinical Medicine</i>. 2020;9(3):628.</p> <p>4. Radman S, Raić S, Bućan I, Pribisalić A, Dunatov J, Mudnić I, Boban M, Pellay FX, Kolčić I, Polašek O. Searching for carbonylome biomarkers of aging - Development and validation of the proteomic method for quantification of carbonylated protein in human plasma. <i>Croatian Medical Journal</i> 2020;61(2):119-125.</p> <p>5. Barak OF, Janjic N, Drvis I, Mijacika T, Mudnic I, Coombs GF, Thom SR, Madic D, Dujic Z. Vascular dysfunction following breath-hold diving. <i>Canadian Journal of Physiology and Pharmacology</i>. 2020;98(2):124-130.</p>
<p>Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)</p>	<p>1. Cikes M, Vrdoljak L, Buljan I, Mudnic I, Vukojevic K, Medvedec Mikic I, Kostic S. Students' Practices and Knowledge on Antimicrobial Usage and Resistance in Split, Croatia: The Education of Future Prescribers. <i>Microbial drug resistance</i>. 2020;26(6):623-629.</p> <p>2. Jurić D, Pranić S, Tokalić R, Milat AM, Mudnić I, Pavličević I, Marušić A. Clinical trials on drug-drug interactions registered in ClinicalTrials.gov reported incongruent safety data in published articles: an observational study. <i>J Clin Epidemiol</i>. 2018;104:35-45.</p>
<p>Professional and research projects from the field of the course carried</p>	<p>Croatian Science Foundation, investigator, Project 8652 „BioWine“ 2014-2019.</p>

out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Continuing education course <i>Skills of medical education and scientific work</i> at the University of Split School of Medicine
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Prof. Ivana Novak Nakir
Title of the course at the proposed study programme	Medical Genetics
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2
Telephone number	021557880
E-mail address	ivana.novak@mefst.hr
Personal web page	http://www.mefst.unist.hr/research/research-groups-and-laboratories/laboratory-for-cancer-research/ivana-novak-nakir-2341/2341
Year of birth	1978
Scientist ID	296095
CROSB I profile ID	23775
Research rank and date of the last appointment	Scientific adviser, December 4th 2019.
Research and teaching or teaching rank, and the date of the last appointment	Full professor, February 1st 2022.
Area and field of appointment into research rank	Biomedicine and health, basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	April 1 st 2011.
Job title (professor, researcher, associate teacher, etc.)	Full professor
Field of research	Biomedicine and health; basic medical sciences; genetics, genomics and proteomics
Position in the institution	Head of the department
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Karolinska Institutet
Place	Stockholm, Sweden
Date	Nov 24 th 2006.
INFORMATION ON ADDITIONAL TRAINING	
Year	Jan-Jun 2002.
Place	Stockholm, Sweden
Institution	Karolinska Institutet
Field of training	The Research Training Program in Cell Biology and Genetics
Year	May 2004.
Place	Woods Hole, Massachusetts, USA
Institution	Marine Biological Laboratory
Field of training	Analytical and Quantitative Light Microscopy in Biology, Medicine and Materials Science
Year	Nov 2004.
Place	New York, USA
Institution	Cold Spring Harbor Laboratory
Field of training	Immunocytochemistry, In situ Hybridization and Live Cell Imaging
Year	May-July 2010.
Place	San Diego, USA
Institution	The Scripps Research Institute, San Diego, SAD
Field of training	3 months in the lab of prof. Claudio Joazeiro – additional education in cellular and molecular biology
Year	Jun 2008. – Aug 2010.
Place	Split, Croatia

Institution	Mediterranean institute fro life sciences - MedILS
Field of training	EMBO Long term fellowship – postdoctoral training
Year	Nov 2010
Place	Leimen, Njemačka
Institution	EMBO
Field of training	EMBO Laboratory Management course for postdocs
Year	Jan-March 2011.
Place	Frankfurt am Main, Njemačka
Institution	Goethe School of Medicine, Institute of Biochemistry II
Field of training	(Short term fellowship in the lab prof. dr. sc. Ivana Đikića – additional education in cellular biology and biochemistry
Year	May 2015.
Place	Zagreb, Croatia
Institution	Faculty of Sciences
Field of training	Microscale thermophoresis workshop
Year	Oct 2017.
Place	Zagreb, Croatia
Institution	Childrens hospital Srebrnjak
Field of training	Flow cytometry course
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, excellent Swedish, good German, sufficient
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<p>Undergraduate courses:</p> <ul style="list-style-type: none"> - “Immunology and medical genetics” in Medicine (course leader) - “Immunology and medical genetics” Dental Medicine - “Immunology and medical genetics” Medical studies in English (course leader) - “Molecular Biology and Genetics” in Pharmacy - “Immunology and Vaccines” in Pharmacy - elective course “Biochemical scientific curiosities” <p>Graduate courses:</p> <ul style="list-style-type: none"> - “Cell signalling”, Graduate school – Biology of Neoplasms (course leader) - “Genes and signalling”, Graduate school – Evidence based medicine - „The role of ubiquitin in health and diseases” (elective course), Graduate school – TRIBE - „Medical genetics in pediatrics“, Specialistic university postgraduate study in Pediatrics
Authorship of university textbooks from the field of the course	<p>Translations:</p> <ol style="list-style-type: none"> 1. Turnpenny P, Ellard S. Emery's elements of medical genetics 14. ed, Medicinska naklada 2011. 2. Cellular and molecular immunology , 8 ed. Abul K. Abbas, Andrew H. H. Lichtman, Shiv Pillai. Medicinska naklada 2018. 3. Basic Immunology, Functions and Disorders of the Immune System, 5eAbul K. Abbas, Andrew H. H. Lichtman, Shiv Pillai. University of Split, School of Medicine, Split, 2017 <p>Textbooks:</p>

	1. Genetičko informiranje u praksi. Poglavlje: "Molekularna genetika mitohondrijskih bolesti", Medicinska naklada, 2016.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>1. Marinković M and Novak I, A brief overview of BNIP3L/NIX receptor-mediated mitophagy, <i>FEBS Open Bio</i>, 2021</p> <p>2. Marinković M, Šprung M and Novak I, Dimerization of mitophagy receptor BNIP3L/NIX is essential for recruitment of autophagic machinery, <i>Autophagy</i>. 2021 May;17(5):1232-1243.</p> <p>3. Marinković M, Šprung M, Buljubašić M and Novak I, Autophagy modulation in cancer: current knowledge on action and therapy, <i>Oxidative Medicine and Cellular Longevity</i>, vol. 2018, 2018. doi:10.1155/2018/8023821</p> <p>4. Rogov VV, Suzuki H, Marinković M, Lang V, Kato R, Kawasaki M, Buljubašić M, Šprung M, Rogova N, Wakatsuki S, Hamacher-Brady A, Dötsch V, Dikić I, Brady NR and Novak I, Phosphorylation of the mitochondrial autophagy receptor Nix enhances its interaction with LC3 proteins. <i>Sci Rep</i>. Apr 25;7(1):1131, 2017.</p> <p>5. Šprung M, Dikić I, Novak I. Flow Cytometer Monitoring of Bnip3- and Bnip3L/Nix-Dependent Mitophagy. <i>Methods Mol Biol</i>. 2017, 1759:105-110</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	-
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>2021.-2025. CSF research project: „Regulation of receptor-mediated mitophagy in erytroid lineage cells” IP-2020-02-3883</p> <p>2021.-2025. CSF young researchers career development „Regulation of receptor-mediated mitophagy in erytroid lineage cells” DOK-2021-02-4248</p> <p>2015.-2018. CSF installation project: „The role of autophagy receptor in selective mitochondrial removal” UIP-2013-11-5246</p> <p>2015.-2021. CSF young researchers career development „The role of autophagy receptor in selective mitochondrial removal” DOK-2014-06-9538</p> <p>2021.-2025. COST Action CA20113 „Proteocure” (MC member)</p> <p>2016.-2020. COST Action CA15138 „Transautophagy” (MC member)</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	University educational course of educators
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2022. Republic of Croatia science award for 2021.</p> <p>2017. University of Split, School of Medicine annual award for best research article in ac. year 2016./2017.</p> <p>2012. University of Split, School of Medicine annual award for best research article in ac. year 2011./2012.</p> <p>2011. Croatian society of biochemistry and molecular biology Annual award for 2010.</p>

	2010. Goethe University stipend for attending 3-month postdoctoral specialization 2008.-2010. EMBO Long Term Fellowship 2002. Yearly stipend Karolinska institutet, Stockholm, Sweden
--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Title, name and last name of the course leader	Asst. Prof. Jasminka Omerovic
Title of the course at the proposed study programme	Immunology and Vaccines
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2
Telephone number	021557877
E-mail address	jasminka.omerovic@mefst.hr
Personal web page	http://mefst.unist.hr/znanost/istrazivacke-skupine-i-laboratoriji/laboratorij-za-istrazivanje-raka/erbb-signaling/6341
Year of birth	1973
Scientist ID	353614
CROSB I profile ID	33290
Research rank and date of the last appointment	Research associate, May 23 th , 2016.
Research and teaching or teaching rank, and the date of the last appointment	Assistant Professor, March 18 th , 2016.
Area and field of appointment into research rank	Biomedicine and health, basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split, School of Medicine
Date of employment	March 18 th , 2016.
Job title (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Biomedicine and health; basic medical sciences; genetics, genomics and proteomics
Position in the institution	Assistant professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	„La Sapienza“ University of Rome
Place	Rome, Italy
Date	June 28 th , 2005.
INFORMATION ON ADDITIONAL TRAINING	
Year	2013-2015
Place	Uppsala, Sweden
Institution	Ludwig Institute for Cancer Research (LICR)
Field of training	Basic medical sciences, tumor cell signalling
Year	2006-2011
Place	Liverpool, UK
Institution	Department of Cellular and Molecular Physiology, University of Liverpool
Field of training	Basic medical sciences; Tumor cell signalling; Proteomics;
Year	2005-2006
Place	Rome, Italy
Institution	Regina Elena Cancer Research Institute (IFOM) and „La Sapienza“, University of Rome;
Field of training	Basic medical sciences; Tumor cell signalling;
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, excellent Italian, excellent
COMPETENCES FOR THE COURSE	

Earlier experience as course	Undergraduate courses: - "Immunology and medical genetics" in Medicine
teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	- "Immunology and medical genetics" Dental Medicine - "Immunology and medical genetics" Medical studies in English - "Molecular Biology and Genetics" in Pharmacy - "Immunology and Vaccines" in Pharmacy, (course leader) - elective course "Molecular oncology – basics of personalized medicine", course leader Graduate courses: - "Cell signalling", Graduate school – Biology of Neoplasms - "Genes and signalling", Graduate school – Evidence based medicine
Authorship of university textbooks from the field of the course	-
Professional and research papers published in the last five years from the field of the course (max 5 references)	1. Current Approaches in NSCLC Targeting K-RAS and EGFR. Aran V, Omerovic J . Int J Mol Sci. 2019 Nov 14;20(22):5701.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	-
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	Project: „EGF receptor signalling in tumor cells, resistant to inhibitors“, project leader Project: „Role of Spartan protein in replication“, HRZZ IP-06-2016, project leader: Prof. Ivana Marinović Terzić
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	University educational course of educators
PRIZES AND AWARDS	
Prizes and awards for teaching and research	-

Title, name and last name of the course leader	Assoc. Prof. Sanja Perinović Jozić
Title of the course at the proposed study programme	Biotechnological Processes of the Pharmaceutical Industry
GENERAL INFORMATION ON COURSE LEADER	
Address	Ruđera Boškovića 35, 21000 Split
Telephone number	021/329-455
E-mail address	sanja@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/kontakt-3/kontakt-djelatnici/item/perinovic-jozic-sanja
Year of birth	1978.
Scientist ID	267214
CROSBİ profile ID	32304
Research rank and date of the last appointment	Senior research associate, March 2, 2021
Research and teaching or teaching rank, and the date of the last appointment	Associate Professor, May 24, 2021
Area and field of appointment into research rank	Technical sciences - field of chemical engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of chemistry and technology in Split
Date of employment	01.09.2005.
Job title (professor, researcher, associate teacher, etc.)	Associate professor
Field of research	Chemical engineering in materials development
Position in the institution	-
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of chemistry and technology in Split
Place	Split
Date	11.01.2012.
INFORMATION ON ADDITIONAL TRAINING	
Year	2006.
Place	Aachen, Germany
Institution	Deutsches Wollforschungsinstitut an der Rheinisch-Westfälisch Technische Hochschule (DWI an der RWTH)
Field of training	Polymeric materials (blends, composites)
Year	2007.
Place	Toulouse, France
Institution	Intensive Programme (IP) Renewable Biomaterials, Erasmus Programa
Field of training	Renewable raw materials, biomaterials
Year	2011.
Place	Trst, Italy
Institution	Elettra-Sincrotrone Trieste S.C.p.A.
Field of training	Polymeric materials (biocomposites)
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of	-

foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	-
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Biotechnological processes in pharmaceutical industry, Integrated undergraduate and graduate study of Pharmacy
Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<ol style="list-style-type: none"> 1. Green scholarships of Carlsberg Croatia for a one-year project "Polylactide composites with olive stone flour as a filler". 2. IUPAC scholarships for participation in European Polymer Congress 2009 for a paper Application of Model-Free Kinetics to the Thermal Degradation of Poly(L-lactide)/Olive Stone Flour Composites. 3. Acknowledgement for the best presentation for work: S. Perinović Jozić, A. Stoilova, J. Jakić, B. Andričić, Preparation and thermal analysis of polylactic acid/magnesium hydroxide composites, 20th International Conference MATRIB20 2019, Vela Luka, Hrvatska (2019), Book of Abstracts 175-190.

Title, name and last name of the course leader	Prof. Ozren Polašek
Title of the course at the proposed study programme	Population Genetics
GENERAL INFORMATION ON COURSE LEADER	
Address	Ružmarinka 17, 10000 Zagreb
Telephone number	0915163443
E-mail address	op@mefst.hr
Personal web page	-
Year of birth	1979
Scientist ID	
CROSBİ profile ID	
Research rank and date of the last appointment	Professor, 2020
Research and teaching or teaching rank, and the date of the last appointment	Research advisor, 2017
Area and field of appointment into research rank	Biomedicine and health, Public health
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	06.12.2010
Job title (professor, researcher, associate teacher, etc.)	Professor
Field of research	Biomedicine and health
Position in the institution	Professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD/PhD
Institution	University of Zagreb/University of Edinburgh, UK
Place	Zagreb/Edinburgh
Date	2008/2009
INFORMATION ON ADDITIONAL TRAINING	
Year	2011
Place	Zagreb
Institution	Ministry of Health/University of Zagreb
Field of training	Public health – Master of Public Health (Mag. univ. publ. health)
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	18 cycles of the same course in two study programmes
Authorship of university textbooks from the field of the course	Genetic epidemiology and person-oriented medicine; in Person in medicine and health care. Medicinska naklada, ISBN 978-953-176-551-0

Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Yengo L et al. A saturated map of common genetic variants associated with human height. Nature. 2022;610(7933):704-712. 2. Graham SE, et al. The power of genetic diversity in genome-wide association studies of lipids. Nature. 2021;600(7890):675-679 3. Ruth KS, et al. Genetic insights into biological mechanisms governing human ovarian ageing. Nature. 2021;596(7872):393-397. 4. Marouli E, et al. Rare and low-frequency coding variants alter human adult height. Nature 2017;542(7640):186-190. 5. Okbay A, et al. Genome-wide association study identifies 74 loci associated with educational attainment. Nature. 2018;533(7604):539-42.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	-
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. Yengo L et al. A saturated map of common genetic variants associated with human height. Nature. 2022;610(7933):704-712. 2. Graham SE, et al. The power of genetic diversity in genome-wide association studies of lipids. Nature. 2021;600(7890):675-679 3. Ruth KS, et al. Genetic insights into biological mechanisms governing human ovarian ageing. Nature. 2021;596(7872):393-397. 4. Marouli E, et al. Rare and low-frequency coding variants alter human adult height. Nature 2017;542(7640):186-190. 5. Okbay A, et al. Genome-wide association study identifies 74 loci associated with educational attainment. Nature. 2018;533(7604):539-42.
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Numerous teaching courses
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2017-University of Split School of Medicine: award for Best research grant (2016), and Head of Best department according to the student's assessments (2015)</p> <p>2016-University of Split School of Medicine: award for Best research paper, Best research grant, Best teacher according to the student's assessments</p>

Title, name and last name of the course leader	Prof. Olivera Politeo
Title of the course at the proposed study programme	General Biochemistry, Oxidative Stress and Antioxidant Defense
GENERAL INFORMATION ON COURSE LEADER	
Address	Rudjera Boskovicica 35
Telephone number	
E-mail address	olivera@ktf-split.hr
Personal web page	
Year of birth	1969
Scientist ID	259103
CROSBi profile ID	https://www.bib.irb.hr/pregled/profil/21573
Research rank and date of the last appointment	Scientific adviser 03.09.2019.
Research and teaching or teaching rank, and the date of the last appointment	Full Professor 28.11.2019.
Area and field of appointment into research rank	Natural Science / Chemistry
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology, University of Split, CROATIA
Date of employment	01.12.2003.
Job title (professor, researcher, associate teacher, etc.)	Full professor / Department of Biochemistry
Field of research	Chemistry / Biological potential of Natural Compounds
Position in the institution	Full professor / Department of Biochemistry
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of Science, University of Zagreb, Croatia
Place	Zagreb, Croatia
Date	09.03.2007.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French, 2
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Biochemistry (Graduate Study of Chemical Technology, Orientation: Environmental Protection) Biochemistry (Undergraduated Study of Food Technology) Biochemistry I (Undergraduate Study of Chemistry) Biochemistry II (Undergraduate Study of Chemistry) Biochemistry (University Department of Health Study) Introduction of Molecular Biology (Graduate Study of Chemistry),

	<p>Selected Chapters from Biochemistry (Graduated Study of Chemistry)</p> <p>Applied Biochemistry (Pharmacy)</p>
Authorship of university textbooks from the field of the course	Olivera Politeo: <i>Biokemijski praktikum</i>
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>Boris Lazarevic, Ana Nimac, Monika Vidak, Jerko Gunjaca, Olivera Politeo, Klaudija Carovic-Stanko. Application of Phenotyping Methods in Detection of Drought and Salinity Stress in Basil (<i>Ocimum basilicum</i> L.) Frontiers in Plant Science, 12, 2021, 1-13.</p> <p>Mejra Bektasevic, Olivera Politeo, Ivana Carev. Comparative Study of Chemical Composition, Cholinesterase Inhibition and Antioxidant Potential of <i>Mentha pulegium</i> L. Essential Oil. Chemistry and Biodiversity, 18 (3), 2021, 1-9.</p> <p>Ivana Carev, Ana Maravić, Nada Ilić, Vedrana Čikeš Čulić, Olivera Politeo, Zoran Zorić, Mila Radan. UPLC-MS/MS Phytochemical Analysis of Two Croatian <i>Cistus</i> Species and Their Biological Activity. Life 10 (112), 2020 1-13.</p> <p>Franko Burčul, Ivica Blažević, Mila Radan, Olivera Politeo. Terpenes, Phenylpropanoids, Sulfur and Other Essential Oil Constituents as Inhibitors of Cholinesterases. Current Medicinal Chemistry 27, 26, 2020, 4297-4343.</p> <p>Olivera Politeo, Mejra Bektasevic, Ivana Carev, Mladenka Jurin, Marin Roje. Phytochemical Composition, Antioxidant Potential and Cholinesterase Inhibition Potential of Extracts from <i>Mentha pulegium</i> L. Chemistry & Biodiversity 15, 12, 2018, 1-9.</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	BioActCom : Research on Bioactive Compounds from Dalmatian Plants: Their Antioxidant Character and Influence on Enzyme Inhibition and Health (HRZZ-IP-2016-06-1316)
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Faculty of Science, University of Split
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Asoc. Prof. Ani Radonić,
Title of the course at the proposed study programme	Organic Chemistry II, Pharmacognosy
GENERAL INFORMATION ON COURSE LEADER	
Address	Department of Organic Chemistry, Faculty of Chemistry and Technology, University of Split, Ruđera Boškovića 35, 21000 Split
Telephone number	021 329432
E-mail address	radonic@ktf-split.hr
Personal web page	/
Year of birth	1966.
Scientist ID	199981
CROSBİ profile ID	15180
Research rank and date of the last appointment	Research Scientist; March 30 th , 2012.
Research and teaching or teaching rank, and the date of the last appointment	Associate Professor; November 29 th , 2017.
Area and field of appointment into research rank	Natural sciences, Chemistry
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology, University of Split
Date of employment	October 1 st , 1992.
Job title (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	<p>Natural organic compounds:</p> <ul style="list-style-type: none"> • Volatile and semi-volatile compounds (essential oils and aroma compounds): monoterpenes, sesquiterpenes, phenylpropanoids; isolation methods; fractionation methods of complex volatile isolates; analysis of volatile isolates by gas chromatography-mass spectrometry (GC-MS). • Glycosidically bound volatile compounds - nonvolatile aroma precursors: methods of isolation, purification and hydrolysis (enzymatic, acid); identification of aglycones by GC-MS. • Glucosinolates (thioglucosides) and their degradation products from wild-growing Brassicaceae plants: methods of isolation and degradation (thermal degradation, enzymatic degradation); analysis of liberated volatile degradation products by GC-MS. • Evaluation of antioxidant potential of natural products (natural compounds and their mixtures such as different volatile isolates) using different methods.
Position in the institution	<ul style="list-style-type: none"> • Head of Division of Chemistry (2020. – 2023.) • Deputy Head of integrated undergraduate and graduate study of Pharmacy (2020. – 2023.)
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Faculty of Chemistry and Technology, University of Split
Place	Split
Date	September 14 th , 2005.
INFORMATION ON ADDITIONAL TRAINING	

Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<ol style="list-style-type: none"> 1. Undergraduate study of Chemistry: Organic Chemistry I, Organic Chemistry II, Natural Products 2. Graduate study of Chemistry: Synthesis of Biologically Active Compounds 3. Graduate study of Pharmacy: Organic Chemistry I, Organic Chemistry II, Pharmacognosy
Authorship of university textbooks from the field of the course	I. Jerković, A. Radonić, Praktikum iz organske kemije, Udžbenici Sveučilišta u Splitu, Split, 2009.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. A. Radonić, M. Zekić, Z. Marijanović, Volatile Constituents of Aerial Parts of <i>Capsella rubella</i> Reut., <i>Croat. Chem. Acta</i> 93 (3) (2020). 2. I. Jerković, Z. Marijanović, A. Radonić, M. Zekić, M. Kranjac, The Application of Headspace Solid-phase Microextraction as a Preparation Approach for Gas Chromatography with Mass Spectrometry, <i>Kem. Ind.</i> 69 (2020) 515-519. 3. M. Zekić, A. Radonić, Z. Marijanović, Glucosinolate Profiling of <i>Calepina irregularis</i>, <i>Nat. Prod. Commun.</i> 11 (2016) 1329-1332. 4. I. Jerković, M. Kranjac, Z. Marijanović, M. Zekić, A. Radonić, C. I. G. Tuberoso, Screening of <i>Satureja subspicata</i> Vis. Honey by HPLC-DAD, GC-FID/MS and UV/VIS: Prephenate Derivatives as Biomarkers, <i>Molecules</i> 21 (2016) 377. 5. I. Jerković, A. Radonić, M. Kranjac, M. Zekić, Z. Marijanović, S. Gudić, M. Kliškić, <u>Red clover (<i>Trifolium pratense</i> L.) honey: Volatiles chemical-profiling and unlocking antioxidant and anticorrosion capacity</u>, <i>Chem Paper</i> 70 (2016) 726-736.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried	1. Center of Excellence (KK.01.1.1.01.0002) „BioProspecting of the Adriatic Sea“, European Commission-Cohesion Fund, 2017. – 2022.

out in the last five years (max 5 references)	<p>2. Center of competence 3LJ (CEKOM 3LJ; KK.01.2.2.03.0017), European Commission-European Regional Development Fund, 2020. – 2023.</p> <p>3. Project HRZZ (IP-11-2013-8547) “Research of Natural Products and Flavours: Chemical Fingerprinting and Unlocking the Potential (NaPro-Flav)” Croatian Science Foundation, 2014. - 2018.</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Assoc. Prof. Marija Raguz
Title of the course at the proposed study programme	Physics for Pharmacists
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2
Telephone number	+385 21 557 867
E-mail address	marija.raguz@mefst.hr
Personal web page	http://www.mefst.unist.hr/nastava/katedre/medicinska-fizika-i-biofizika-631/nastavnici-1047/doc-dr-sc-marija-raguz/7388
Year of birth	1973
Scientist ID	271613
CROSBİ profile ID	23378
Research rank and date of the last appointment	Senior research associates, December 7, 2017.
Research and teaching or teaching rank, and the date of the last appointment	Associate professor, January 25, 2018.
Area and field of appointment into research rank	Natural sciences, physics
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	2009
Job title (professor, researcher, associate teacher, etc.)	Associate Professor
Field of research	Biophysics
Position in the institution	Head of the Department of Medical Physics and Biophysics
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Medical College of Wisconsin
Place	Milwaukee, Wisconsin, USA
Date	March 2010
INFORMATION ON ADDITIONAL TRAINING	
Year	2010, 2011, 2012, 2013, 2014, 2015, 2016
Place	Milwaukee, WI, USA
Institution	Medical College of Wisconsin
Field of training	Biophysics
Year	2018
Place	Okinawa, Japan
Institution	Okinawa Institute of Science and Technology
Field of training	Biophysics
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English 5 (excellent)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it	2018 – present – Medical physics and biophysics for medical students, program in English, University of Mostar School of Medicine, Bosnia and Herzegovina

is/was held, and level of study programme)	<p>2016 – present – elective course Physics overview for medical students, program in English, University of Split School of Medicine, Croatia</p> <p>2018 – present –Medical physics and biophysics for medical students, program in English, University of Split School of Medicine, Croatia</p> <p>2018 – present – Medical physics and biophysics for medical students, University of Split School of Medicine, Croatia</p> <p>2018 – present – Biophysics for dental students, University of Split School of Medicine, Croatia</p> <p>2016 – 2017 –Physics 1, Physics 2, and Modern physics, Faculty of natural and educational sciences University of Mostar, BiH</p> <p>2012 – present – Selected chapters in biophysics/ Biophysic of biological membranes, Faculty of natural sciences, University of Split, Croatia</p>
Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Subczynski WK, Raguz M, Widomska J, Multilamellar Liposomes as a Model for Biological Membranes: Saturation Recovery EPR Spin-Labeling Studies, <i>Membranes (Basel)</i>. 2022 Jun 26;12(7):657. 2. Boban Z, Mardešić I, Subczynski WK, Jozić D, Raguz M, Optimization of Giant Unilamellar Vesicle Electroformation for Phosphatidylcholine/Sphingomyelin/Cholesterol Ternary Mixtures, <i>Membranes (Basel)</i>. 2022 May 16;12(5):525. 3. Boban Z, Mardešić I, Subczynski WK, Raguz M, Giant Unilamellar Vesicle Electroformation: What to Use, What to Avoid, and How to Quantify the Results, <i>Membranes (Basel)</i>. 2021 Nov 7;11(11):860. 4. Boban Z, Puljas A, Kovač D, Subczynski WK, Raguz M, Effect of Electrical Parameters and Cholesterol Concentration on Giant Unilamellar Vesicles Electroformation, <i>Cell Biochem Biophys</i>. 2020 Jun;78(2):157-164. 5. Raguz M, Kumar SN, Zareba M, Ilic N, Mainali L, Subczynski WK, Confocal Microscopy Confirmed that in Phosphatidylcholine Giant Unilamellar Vesicles with very High Cholesterol Content Pure Cholesterol Bilayer Domains Form, <i>Cell Biochem Biophys</i>. 2019 Dec;77(4):309-317.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. Unravelling cholesterol-domain organization and function in the plasma membrane of the eye lens fiber cells using fluorescent methods, HRZZ, PI, 2019-2023 2. Lipid Domains in Lens Membranes of a Single Eye: EPR Spin-Labeling Studies, NIH, Collaborator, 2015 – 2019 3. Lipid Domains in Lens Membranes of a Single Eye: EPR Spin-Labeling Studies, bilateral project Croatia-USA 2019 – 2020
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	

Prizes and awards for teaching and research	2018 – University award for science, University of Split, Croatia 2009 – Poster award, 19th Annual Research Day, Medical College of Wisconsin, Milwaukee, WI, USA
---------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------

Title, name and last name of the course leader	Asst. Prof. Doris Rušić
Title of the course at the proposed study programme	Introduction to Pharmacy, Pharmaceutical Legislation, Analytics of Medicines, Pharmaceutical Care and Self-Medication
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2
Telephone number	021 557 800
E-mail address	doris.rusic@mefst.hr
Personal web page	https://www.bib.irb.hr/pregled/profil/35009
Year of birth	1993
Scientist ID	369853
CROSBİ profile ID	35009
Research rank and date of the last appointment	Research associate, 21 st October 2020
Research and teaching or teaching rank, and the date of the last appointment	Assistant professor, 11 th November 2021
Area and field of appointment into research rank	Biomedicine and health, Pharmacy
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	15 th May 2017
Job title (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	pharmacy, public health, antimicrobial resistance, physician-pharmacists cooperation, pharmacovigilance, pharmaceutical legislation, IBD
Position in the institution	Teacher in Pharmaceutical Legislation, Pharmaceutical Care and Self-Medication, Pharmacopoeia
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	Split
Date	16 th April 2020
INFORMATION ON ADDITIONAL TRAINING	
Year	2021
Place	Zagreb
Institution	University of Zagreb Faculty of Pharmacy and Biochemistry
Field of training	Drug development
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course	

teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	Rusic D, Bukic J. Priručnik za stručno osposobljavanje (studenti). Split: University of Split;2021
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Ljubetic N, Rusic D, Bozic J, Margan Koletic Z, Kovacic B, Tomic S. Suspected adverse drug reaction reports of anatomic therapeutic chemical group A. <i>Med Jad</i> 2021;51:69-75 2. Bukic J, Kuzmanic B, Rusic D, Portolan M, Mihanovic A, Seselja Perisin A, Leskur D, Petric A, Bozic J, Tomic S, Modun D. Community pharmacists' use, perception and knowledge on dietary supplements: a cross sectional study. <i>Pharm Pract (Granada)</i>. 2021;19:2251. 3. Rusic D, Bukić J, Seselja Perisin A, Leskur D, Modun D, Petric A, Vilovic M, Bozic J. Are We Making the Most of Community Pharmacies? Implementation of Antimicrobial Stewardship Measures in Community Pharmacies: A Narrative Review. <i>Antibiotics (Basel)</i>. 2021;10:63. 4. Zekan L, Mestrovic A, Perisin AS, Bukic J, Leskur D, Rusic D, Modun D. Improving community pharmacists' clinical knowledge to detect and resolve drugrelated problems in Croatia: a before/after survey study investigating the efficacy of an educational intervention. <i>BMJ Open</i>. 2020;10:e034674. 5. Knežević E, Rušić D, Bukić J, Božić J, Šešelja Perišin A, Leskur D, Modun D, Tomić S. Pregled poticaja za razvoj pedijatrijskih lijekova i broja pedijatrijskih kliničkih ispitivanja faze III u izabranim državama. <i>Medicina Fluminensis</i>. 2019;4:337-345.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. Bukić J, Rušić D, Šešelja Perišin A, Leskur D, Meštrović A, Modun D. Razvoj i implementacija objektivno strukturiranog kliničkog ispita na Studiju farmacije u Splitu. <i>Farm glas</i>. 2018;74:97-108.
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>2021. – 2024. Erasmus+ Programme „Innovating quality assessment tools for pharmacy studies in Bosnia and Herzegovina“ (IQPHARM) (Contract No: 618089-EPP-1-2929-1-BA-EPPKA2-CBHE-JP). Collaborator</p> <p>2019. – 2022. European Social Fund „Primjena HKO-a u unapređenju studijskih programa u području farmacije i medicinske biokemije“, (Contract No: UP.03.1.1.03.0021). Collaborator</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Medical education competences“ course at Medical Faculty University of Split
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2021. – Diploma of the Croatian Pharmaceutical Society</p> <p>2019. – Best poster presentation in the section „Other topics in pharmacology“ at 9th Croatian Congress of Pharmacology with International Participation</p> <p>2018. – poster of distinction: Tadin Hadjina I, Zivkovic PM, Matetic A, Borovac JA, Bukic J, Rusic D, Tonkic A, Bozic, J. Dietary patterns in patients with inflammatory bowel disease. Tailored Therapies for IBD: A Look into the Future – Abstracts. Milano, Italija, 2018.</p>

Title, name and last name of the course leader	Prof. Nataša Stipanelov Vrandečić
Title of the course at the proposed study programme	Packaging of Pharmaceutical Products
GENERAL INFORMATION ON COURSE LEADER	
Address	R. Boškovića 35, 21 000 Split
Telephone number	021 329 459
E-mail address	nstip@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/obavijesti-2/obavijesti-poslijediplomski-studij/172-djelatnici/cv/185-cv57
Year of birth	1966.
Scientist ID	226264
CROSBİ profile ID	27259
Research rank and date of the last appointment	Scientific advisor with tenure, 2021-9-7
Research and teaching or teaching rank, and the date of the last appointment	Full Professor with tenure, 2021-11-24
Area and field of appointment into research rank	Area: Technical Sciences; Field: Chemical Engineering
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology
Date of employment	1995-06-01
Job title (professor, researcher, associate teacher, etc.)	Full Professor
Field of research	Chemical Engineering in Materials Development
Position in the institution	Head of Department of Organic Technology
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Ph. D.
Institution	Faculty of Chemistry and Technology
Place	Split
Date	
INFORMATION ON ADDITIONAL TRAINING	
Year	2017.
Place	Monaca, USA
Institution	Penn State University
Field of training	Impruvment of teachers competencies
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Packaging, graduate study of Chemical Technology Food packaging, undergraduate study of Food Technology
Authorship of university textbooks from the field of the course	
Professional and research papers	

published in the last five years from the field of the course (max 5 references)	
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	Award of the Society of Plastics and Rubber for master's thesis in the field of polymeric technology (2001.)

Title, name and last name of the course leader	Prof. Davorka Sutlovic
Title of the course at the proposed study programme	Pharmaceutical Toxicology, Tribunal pharmacy, Pharmacogenetics
GENERAL INFORMATION ON COURSE TEACHER	
Address	Kranjčevićeva 28
Telephone number	098/9534934/
E-mail address	dsutlov@kbsplit.hr
Personal web page	/
Year of birth	1961.
Scientist ID	256403
Research or art rank, and date of last rank appointment	Scientific advisor with tenure; 2019.
Research-and-teaching, art-and-teaching or teaching rank, and date of last rank appointment	Full professor with tenure 2020.
Area and field of election into research or art rank	Biomedicine and health; Basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution where employed	Medical School Split; University department of health studies
Date of employment	2008; 2019.
Name of position (professor, researcher, associate teacher, etc.)	Full professor with tenure
Field of research	forensic toxicology and DNA analysis; chemistry and instrumental techniques
Function	Head of the Department of Toxicology and Pharmacogenetics; Assistant to the Head of Department for Education
INFORMATION ON EDUCATION – Highest degree earned	
Degree	Ph.D.; M.Sc.; B.Sc.;
Institution	SPLIT MEDICAL SCHOOL; FACULTY OF SCIENCE; FACULTY OF CHEMISTRY AND TECHNOLOGY
Place	SPLIT; ZAGREB; SPLIT
Date	2005; 2003; 1987;
INFORMATION ON ADDITIONAL TRAINING	
Year	2018; 2015; 2011; 2007; 2005; 2005; 2005; 2004; 2004; 1998;
Place	<i>Slovenia-Otočec; Italy-Florence; Italy, Pavia and Verona; Greek- Athens; ZAGREB; Germany – Duisburg; ZAGREB; Plitvice; Germany - Darmstadth; PULA ;</i>
Institution	European Societies of Toxicology ; Forensic Toxicology Unit, Department of Health Science, University of Florence; Clinical Hospital; Medical School; Medical School- Department of forensic science and criminology; Shimadzu; Center for Criminalistic Investigation “ Ivan Vučetić”; European Societies of Toxicology; Applied Biosystems; European Societies of Toxicology;
Field of training	Specialized toxicology course - Regulatory toxicology; Toxicology; Clinical toxicology; Forensic toxicology; Forensic toxicology; Toxicology; Forensic toxicology; Toxicology; Toxicology; Toxicology
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (name title of course, study programme where it is/was offered, and level of study programme)	<p>1. UNDERGRADUATE AND GRADUATE: ON MEDICINE STUDY</p> <p>from 2000. - Forensic science from 2007. - Small dose of toxicology from 2007. - Drugs Abuse in sport</p> <p>2. UNDERGRADUATE AND GRADUATE: STUDY OF PHARMACY</p> <p>from 2011. - Forensic pharmacy from 2011. - Pharmaceutical toxicology</p> <p>3. UNDERGRADUATE AND GRADUATE: STUDY OF MEDICAL LABORATORY DIAGNOSTICS</p> <p>from 2012. - INSTRUMENTAL TECHNIQUES IN MLD from 2012. - Food Toxicology from 2019. - General chemistry and stoichiometry from 2019. - Analytical chemistry from 2019. - Organic chemistry from 2019. - Introduction to scientific work</p> <p>4. GRADUATE: STUDY FOR FORENSIC SCIENCES</p> <p>from 2010. -2017. Forensic chemistry and toxicology I from 2010. -2017. Forensic chemistry and toxicology II from 2010. - 2017. Applied forensic toxicology from 2010. - 2017. Food Toxicology</p> <p>5. POSTGRADUATE STUDY:</p> <p>5.1.ON MEDICAL SCHOOL SPLIT from 2007. - Biochemical mechanisms of toxicity</p> <p>5.2.ON LAW SCHOOL SPLIT - STUDY OF MEDICAL LAW from 2007. - Forensic medicine from 2007. - CSI Split - Medical criminology</p> <p>5.3. ON PHARMACEUTICAL AND BIOCHEMISTRY SCHOOL OF ZAGREB STUDY OF TOXICOLOGY from 2011. - Forensic toxicology in human medicine</p>
Authorship of university/faculty textbooks in the field of the course	<ol style="list-style-type: none"> 1. Sutlović Davorka, et al. Fundamentals of Forensic Toxicology. Split: Redak; 2011. 2. Sutlović Davorka, et al. Food Toxicology. Split: Redak; 2011. 3. Sutlović Davorka. Basics of chemistry, forensics manual for students. Split: Redak; 2013. 4. Kovačić, Zdravko; Nestić, Marina; Sutlović, Davorka. Forensic toxicology // Forensic medicine and

	deontology/ Mayer, Davor (ur.). Zagreb: Medicinska naklada, 2018. 153-201.
Professional, scholarly and artistic articles published in the last five years in the field of the course (5 works at most)	<ol style="list-style-type: none"> 1. Sutlović, Davorka; Kuret, Sendi; Definis, Marija New psychoactive and classic substances in pooled urine samples collected at the Ultra Europe festival in Split, Croatia // <i>Arhiv za higijenu rada i toksikologiju</i>, 72 (2021), 3; 198-204 doi:10.2478/aiht-2021-72-3509 2. Nedoklan, Srđan; Knezović, Zlatka; Knezović, Nina; Sutlović, Davorka Nutrition and mineral content in human teeth through THE CENTURIES // <i>Archives of oral biology</i>, 124 (2021), 105075, 8 doi:.org/10.1016/j.archoralbio.2021.105075 3. Sutlović, Davorka; Ključević, Željko; Kuret, Sendi ABCB1, CYP2B6, and CYP3A4 genetic polymorphisms do not affect methadone maintenance treatment in HCV-positive patients // <i>Arhiv za higijenu rada i toksikologiju</i>, 71 (2020), 4; 353-358 doi:10.2478/aiht-2020-71-3378 4. Patrician, Alexander; Versic-Bratincevic, Maja; Mijacika, Tanja; Banic, Ivana; Marendic, Mario; Sutlović, Davorka; Dujčić, Željko; Ainslie, Philip N. Examination of a New Delivery Approach for Oral Cannabidiol in Healthy Subjects: A Randomized, Double-Blinded, Placebo-Controlled Pharmacokinetics Study. // <i>Advances in therapy</i>, 36 (2019), 11; 3196-3210 doi:10.1007/s12325-019-01074-6 5. Ključević, Željko; Benzon, Benjamin; Ključević, Nikola; Veršić Bratinčević, Maja; Sutlović, Davorka Liver damage indices as a tool for modifying methadone maintenance treatment: a cross-sectional study // <i>Croatian medical journal</i>, 59 (2018), 298-306
Professional and scholarly articles published in the last five years in subjects of teaching methodology and teaching quality (5 works at most)	
Professional, science and artistic projects in the field of the course carried out in the last five years (5 at most)	<ol style="list-style-type: none"> 1. 2007. - Heavy metals in human remains from Klis and Bribir ancient county; LEADER; FUNDING SOURCE - MINISTRY OF SCIENCE, EDUCATION AND SPORTS 2. 2007. - Cardiovascular effects of wine and its constituents; RESEARCHER -FUNDING SOURCE - MINISTRY OF SCIENCE, EDUCATION AND SPORTS 3. Co-leader of the European project "I-SEE European project on New Psychoactive Substance" (2015-2017) 4. Head of the scientific research project of the Government of the Republic of Croatia "Intoxication with new psychoactive substances - treatment protocol" (2017)

	5. Head of the scientific research project of the Government of the Republic of Croatia "Monitoring of intoxications with new psychoactive substances by analysis of urine samples" (2018)
The name of the programme and the volume in which the main teacher passed exams in/acquired the methodological-psychological-didactic-pedagogical group of competences?-pedagoške kompetencije?	Mandatory education at the Medical Faculty Split Tempus Project Training of Trainers in Vienna (2x), Pécs and Zagreb
PRIZES AND AWARDS, STUDENT EVALUATION	
Prizes and awards for teaching and scholarly/artistic work	
Results of student evaluation taken in the last five years for the course that is comparable to the course described in the form (evaluation organizer, average grade, note on grading scale and course evaluated)	

Title, name and last name of the course leader	Asst. Prof. Ana Šešelja Perišin
Title of the course at the proposed study programme	Biopharmacy, Biochemistry of Medicines , Pharmaceuticals, Pharmaceutical Formulations
GENERAL INFORMATION ON COURSE LEADER	
Address	Cesta dr. Franje Tuđmana 465, 21214 Kaštel Kambelovac
Telephone number	+385 21 557816
E-mail address	aperisin@mefst.hr
Personal web page	https://www.bib.irb.hr/pregled/profil/11044
Year of birth	1985.
Scientist ID	340924
CROSBI profile ID	11044
Research rank and date of the last appointment	Research associate, 4th December 2019
Research and teaching or teaching rank, and the date of the last appointment	Assistant professor, 30th January 2020
Area and field of appointment into research rank	Biomedicine and health, Pharmacy
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	12th January 2012
Job title (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	pharmacy
Position in the institution	Assistant Professor, Head of Department of Pharmacy
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	Split
Date	23.10.2020.
INFORMATION ON ADDITIONAL TRAINING	
Year	2021. – today
Place	Zagreb
Institution	University of Zagreb Faculty of Pharmacy and Biochemistry
Field of training	Drug development, postgraduate specialist study program
Year	2019.
Place	Kuopio, Finska
Institution	University of Eastern Finland
Field of training	<i>in vitro</i> drug metabolism
Year	2018.
Place	Zagreb
Institution	University of Zagreb Faculty of Pharmacy and Biochemistry
Field of training	Commercialisation of research („Winter School of Research Commercialisation“, 15 -17 November 2018)
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course	not applicable

teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	Rušić D, Bukić J, editors. Priručnik za stručno osposobljavanje: studenti. Split. University of Split.; 2020.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Leskur D, Bukić J, Petrić A, Zekan L, Rušić D, Šešelja Perišin A, Petrić I, Stipić M, Puizina-Ivić N, Modun D. Anatomical Site Differences of Sodium Laurylsulphate Induced Irritation: randomised controlled trial. <i>Br J Dermatol</i>, 2019, doi: 10.1111/bjd.17633 2. Leskur D, Perišić I, Romac K, Šušak H, Šešelja Perišin A, Bukić J, Rušić D, Kladar N, Božin B, Modun D. Comparison of mechanical, chemical and physical human models of in vivo skin damage: Randomized controlled trial. <i>Skin Res Technol</i>. 2020, doi: 10.1111/srt.12932 3. Bukić J, Rusić D, Mas P, Karabatic D, Božić J, Seselja Perisin, A, Leskur D, Krnic D, Tomic S, Modun D. Analysis of spontaneous reporting of suspected adverse drug reactions for non analgesic over-the-counter drugs from 2008 to 2017. <i>BMC Pharmacol Toxicol</i>, 2019, 20:60. doi: 10.1186/s40360-019-0338-2. 4. Rusić D, Božić J, Bukić J, Seselja Perisin A, Leskur D, Modun D, Tomic S. Evaluation of accordance of antibiotics package size with recommended treatment duration of guidelines for sore throat and urinary tract infections. <i>Antimicrob Resist Infect Control</i>, 2019;8:30. doi: 10.1186/s13756-019-0495-5. 5. Jukić I, Rusić D, Vuković J, Živković PM, Bukić J, Leskur D, Seselja Perisin A, Luksić M, Modun D. Correlation of registered drug packs with Maastricht V/Florence Consensus Report and national treatment guidelines for management of <i>Helicobacter pylori</i> infection. <i>Basic Clin Pharmacol Toxicol</i>, 2019;126:212-25. doi: 10.1111/bcpt.13322
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	<ol style="list-style-type: none"> 1. Bukić J, Rušić D, Šešelja Perišin A, Leskur D, Meštrović A, Modun D. Razvoj i implementacija objektivno strukturiranog kliničkog ispita na Studiju farmacije u Splitu. <i>Farm glas</i>, 74, 2018, 2, 97-108. 2. Seselja Perisin A, Mestrovic A, Bozic J, Kacic J, Bukic J, Leskur D, Rusic D, Zekan L, Stipic M, Modun D. Interprofessional pharmacotherapy workshop: intervention to improve health professionals' and students' attitudes towards collaboration between physicians and pharmacists. <i>J Interprof Care</i>, 2019, 33:456-63. doi: 10.1080/13561820.2018.1541875. 3. Zekan L, Mestrovic A, Seselja Perisin A, Bukic J, Leskur D, Rusic D, Modun D. Improving community pharmacists' clinical knowledge to detect and resolve drug-related problems in Croatia: a before/after survey study investigating the efficacy of an educational intervention. <i>BMJ Open</i>, 2020;10:e034674. doi: 10.1136/bmjopen-2019-034674 4. Seselja Perisin A, Bukic J, Rusic D, Leskur D, Bozic J, Mihanovic A, Vilovic M, Cohadzic T, Modun D. Teaching Pharmacovigilance to Healthcare Students: Identifying Gaps and Opportunities for Improvement. <i>Pharmacy (Basel)</i>. 2021;9(3):147. doi: 10.3390/pharmacy9030147
Professional and research projects from the field of the course carried	2021 – 2024 Erasmus+ <i>Programme Innovating quality assessment tools for pharmacy studies in Bosnia and</i>

<p>out in the last five years (max 5 references)</p>	<p><i>Herzegovina</i> (IQPHARM) (Contract No: 618089-EPP-1-2929-1-BA-EPPKA2-CBHE-JP). Collaborator.</p> <p>2019 – 2022 European Social Fund <i>Primjena HKO-a u unapređenju studijskih programa u području farmacije i medicinske biokemije</i>, (Contract No: UP.03.1.1.03.0021). Collaborator.</p> <p>2019 – Popularization of Science <i>Progledajmo ultraljubičasto</i>, Split, 8th-13th April 2019.</p> <p>3. 2017 – 2018 <i>Clinical efficacy of topical sea mineral preparations</i> Financed by: Split-Dalmatia county (Contract No: 201700157267) - collaborator</p> <p>4. 2016 - 2017 <i>Development of pharmaceutical sea mineral preparations for topical use</i> Financed by: Split-Dalmatia county (Contract No: 201600115185) – collaborator.</p>
<p>Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?</p>	<p>„Medical education competences“ course at University of Split School of Medicine (Split, 17-19 May 2018)</p>
<p>PRIZES AND AWARDS</p>	
<p>Prizes and awards for teaching and research</p>	<p>2017 - Award to the first author of the best research paper in field of Pharmacy for the academic year 2015/16</p> <p>2015 – travel grant from APHAR, Austrian Pharmacological Society for participation in 21st Scientific Symposium of APHAR - Joint meeting with the British Pharmacological Society and the Pharmacological Societies of Croatia, Serbia and Slovenia. Graz, 16 – 18 September 2015</p>

Title, name and last name of the course leader	Asst. Prof. Ivana Škugor Rončević
Title of the course at the proposed study programme	General Chemistry with Stoichiometry
GENERAL INFORMATION ON COURSE LEADER	
Address	Ruđera Boškovića 35/IV floor
Telephone number	+38521329-472
E-mail address	ivana.skugor-roncevic@ktf-split.hr
Personal web page	Škugor Rončević Ivana (unist.hr)
Year of birth	1981.
Scientist ID	291992
CROSBİ profile ID	27882
Research rank and date of the last appointment	Research Associate, October 26, 2016.
Research and teaching or teaching rank, and the date of the last appointment	Assistant Professor, February 1, 2018.
Area and field of appointment into research rank	Natural sciences - chemistry field
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology
Date of employment	September 1, 2006.
Job title (professor, researcher, associate teacher, etc.)	Assistant Professor
Field of research	Department of General and Inorganic Chemistry
Position in the institution	Assistant Professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD (in chemistry)
Institution	Faculty of Science
Place	Zagreb
Date	December 11, 2013.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	

Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>Škugor Rončević, Ivana; Skroza, Danijela; Vrca, Ivana; Kondža, Ana Marija; Vladislavić, Nives, Development and Optimization of Electrochemical Method for Determination of Vitamin C, <i>Chemosensors</i>, 10 (2022), 7; 283-299 doi:10.3390/chemosensors10070283</p> <p>Škugor Rončević, Ivana; Vladislavić, Nives; Chatterjee, Nabanita; Sokol, Vesna; Oliver, Clive L.; Kukovec, Boris-Marko, Structural and Electrochemical Studies of Cobalt(II) and Nickel(II) Coordination Polymers with 6-Oxonicotinate and 4,4'-Bipyridine, <i>Chemosensors</i>, 9 (2021), 12; 352, 13 doi:10.3390/chemosensors9120352</p> <p>Škugor Rončević, Ivana; Buzuk, Marijo; Buljac, Maša; Vladislavić, Nives, The Preparation, Morphological Characterization and Possible Electroanalytical Application of Hydroxyapatite Modified Glassy Carbon Electrode, <i>Crystals</i>, 11 (2021), 7; 772, 13 doi:10.3390/cryst11070772</p> <p>Škugor Rončević Ivana, Vladislavić Nives, Buzuk Marijo, Buljac Maša, Electrodeposition of hydroxyapatite coating on Mg alloy modified with organic acid self- assembled monolayers, <i>Journal of chemical research</i>, 44 (2020), 3-4; 212-220 doi:10.1177/1747519819895980</p> <p>Škugor Rončević, Ivana; Vladislavić, Nives; Buzuk, Marijo, Surface modifications of the biodegradable magnesium based implants with self-assembled monolayers formed by T-BAG method, <i>Acta chimica Slovenica</i>, 65 (2018), 698-708 doi:10.17344/acsi.2018.4400</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ul style="list-style-type: none"> -Pseudopolimorfija u koordinacijskim polimerima kobalta(II) i nikla(II) s miješanim ligandima -Hidrotermalna sinteza i karakterizacija koordinacijskih polimera kobalta(II) i nikla(II) s derivatima nikotinske kiseline -Koordinacijski polimeri kobalta(II) i nikla(II) s derivatima nikotinske kiseline
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	<p>Completed Online course: "Evaluation of student achievements in the online environment".</p> <p>Participation in the workshop "Active Learning in STEM Education".</p> <p>Participation in the professional seminar: "Development and improvement of pedagogical competencies of university teachers".</p> <p>Chemistry Professor, Faculty of Science, University of Zagreb</p>
PRIZES AND AWARDS	
Prizes and awards for teaching and research	ChemComm Poster Prize at the 2nd International Congress of Chemists and Chemical Engineers of Bosnia & Herzegovina

Title, name and last name of the course leader	Asst. Prof. Leida Tandara
Title of the course at the proposed study programme	Clinical Laboratory Diagnostics
GENERAL INFORMATION ON COURSE LEADER	
Address	Dubrovačka 35, 21 000 Split
Telephone number	091 54 21 999
E-mail address	ltandara@kbsplit.hr
Personal web page	
Year of birth	1969.
Scientist ID	373346
CROSBİ profile ID	35372
Research rank and date of the last appointment	Research Associate
Research and teaching or teaching rank, and the date of the last appointment	Assistant professor
Area and field of appointment into research rank	Biomedicine and health, field Pharmacy
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University Hospital Split
Date of employment	01 st April 2003.
Job title (professor, researcher, associate teacher, etc.)	Specialist in clinical chemistry and laboratory medicine
Field of research	Clinical chemistry
Position in the institution	Head of Department of medical laboratory diagnostic
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Master of medical biochemistry
Institution	Faculty of Pharmacy and Biochemistry, Zagreb University
Place	Zagreb
Date	25 th November 1993.
INFORMATION ON ADDITIONAL TRAINING	
Year	2006.-2010.
Place	Split
Institution	University hospital Split
Field of training	Residency in clinical chemistry and laboratory medicine
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Laboratorijske dijagnostika, Studij medicine, VII Laboratory diagnostic, Medical study in english, VII Osnovne laboratorijske pretrage, Diplomski studij sestriinstva, VII
Authorship of university textbooks from the field of the course	Book Chapter: Bolesti želuca, gušterače i crijeva. Drugo izdanje knjige "Medicinska biokemija i laboratorijska medicina u kliničkoj praksi." E. Topić, S. Janković, D. Primorac, M. Štefanović. Zagreb, Medicinska naklada 2018.

Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Nazlić, Jurica; Jurić, Diana; Mudnić, Ivana; Boban, Zvonimir; Dželalija, Ana Marija; Tandara, Leida; Šupe-Domić, Daniela; Gugo, Katarina; Boban, Mladen. Effects of Moderate Consumption of Red Wine on Hepcidin Levels in Patients with Type 2 Diabetes Mellitus // <i>Foods</i>, 11 (2022), 13; 1881, 11 doi:10.3390/foods11131881 (međunarodna recenzija, članak, znanstveni) 2. Tandara, Leida; Rubic, Zana; Tandara, Marijan; Filipi, Petra; Supe Domic, Daniela; Kresic, Branka; Stojanovic Stipic, Sanda; Ivicic, Ivo. Laboratory medicine in pandemic of COVID-19 // <i>Biochemia medica</i>, 32 (2022), 2; 168-181 doi:10.11613/bm.2022.020501 (međunarodna recenzija, pregledni rad, znanstveni) 3. Lapić, Ivana; Rogić, Dunja; Nikolac Gabaj, Nora; Kajić, Katarina; Peran, Nena; Surjan, Lada; Đuras, Anamarija; Cesar Kocijan, Valentina; Bilopavlović, Nada; Smaić, Fran et al. Haemoglobin A1c-based screening for prediabetes and diabetes mellitus: a multi-center study in Croatian adult population // <i>Biochemia medica</i>, 32 (2022), 1; 010903, 6 doi:10.11613/BM.2022.010903 (međunarodna recenzija, kratko priopćenje, znanstveni) 4. Ilic Begovic, Tanja; Radic, Josipa; Radic, Mislav; Modun, Darko; Seselja-Perisin, Ana; Tandara, Leida. Seasonal variations in nutritional status and oxidative stress in patients on hemodialysis: Are they related? // <i>Nutrition</i>, 89 (2021), 111205, 10 doi:10.1016/j.nut.2021.111205 (međunarodna recenzija, članak, znanstveni) 5. Pavicic Ivelja, Mirela; Dolic, Kresimir; Tandara, Leida; Perkovic, Nikola; Mestrovic, Antonio; Ivic, Ivo. Blood markers of endothelial dysfunction and their correlation to cerebrovascular reactivity in patients with chronic hepatitis C infection // <i>PeerJ</i>, 9 (2021), e10723, 12 doi:10.7717/peerj.10723 (međunarodna recenzija, članak, znanstveni)
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	Clinical Epidemiology Summer School Development Project, funded by the MZO, member of the working group
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	"SKILLS OF MEDICAL EDUCATION AND SCIENTIFIC WORK", Split, 4th – 6th February 2016. University of Split, School of medicine
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Prof. Janoš Terzić
Title of the course at the proposed study programme	Biomedical Curiosities
GENERAL INFORMATION ON COURSE LEADER	
Address	Makarska ulica 6, 21000 Split
Telephone number	021 557 944
E-mail address	janos.terzic@mefst.hr
Personal web page	https://mefst.unist.hr/research/research-groups-and-laboratories/laboratory-for-cancer-research/605
Year of birth	1965.
Scientist ID	209906
CROSB I profile ID	28318
Research rank and date of the last appointment	Scientific advisor, May 23 rd 2016.
Research and teaching or teaching rank, and the date of the last appointment	Full professor, September 8 th 2016.
Area and field of appointment into research rank	Biomedicine Basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split, School of Medicine
Date of employment	November 13 th 1993.
Job title (professor, researcher, associate teacher, etc.)	Professor
Field of research	Cancer research (microbiota & immunology)
Position in the institution	Laboratory head, Project leader
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Ph.D. and M.D.
Institution	School of Medicine, University of Zagreb
Place	Zagreb
Date	1998.
INFORMATION ON ADDITIONAL TRAINING	
Year	i. 1991-1993 Postdoctoral fellowship ii. 1995 ESF short term fellowship iii. 1997 British council fellowship iv. 1999 Long term fellowship v. 2002 Short term fellowship vi. 2005-2006 Fulbright long term fellowship vii. 2008 EMBO short term fellowship
Place	i. Harthford, Connecticut, USA ii. Goettingen, Njemačka iii. London, UK iv. Tuebingen, Njemačka v. Uppsala, Švedska vi. San Diego, USA vii. San Diego, USA
Institution	i. University of Connecticut, Dept. Pediatrics ii. Max Planck Institute for Biological Chemistry iii. Imperial College of Science, Medicine and Technology iv. Max Planck Institute for Immunogenetics v. Ludwig Institute for Cancer Research vi. University of California S.D., Dept. Pharmacology vii. University of California S. D., Dept. Pharmacology
Field of training	i. Genetics. The basis of diseases in mice and chickens and the molecular basis of Osteogenesis Imperfecta. ii. Human genetics. Pax genes in human brain development.

	<p>iii. Medical genetics. Determining the genetic basis of G6PD deficiency.</p> <p>iv. Immunology. Proving the presence of specific immunity in the lowest vertebrates.</p> <p>v. Molecular biology. Study of molecular mechanisms of endocytosis.</p> <p>vi. Tumor immunology. Study of the role of interleukin 6 in colon tumors.</p> <p>vii. Tumor immunology. Confirmation of the important role of Stat3 (and IL6) in colon tumors.</p>
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, excellent
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<p>Head of the course "Immunology and medical genetics" in the study of medicine.</p> <p>Head of the course "Immunology and antitoxins" on the pharmacy course.</p> <p>Head of the course "Cell Signaling" and postgraduate study Biology of Innovations.</p> <p>Head of the course "Genes and signaling" at the EBM postgraduate study.</p>
Authorship of university textbooks from the field of the course	<p>Medical physiology. Guyton & Hall. Translator.</p> <p>Basics of immunology. Abbas et al. Translator.</p> <p>Genetic information in practice. Author of the chapter.</p>
Professional and research papers published in the last five years from the field of the course (max 5 references)	<p>Professor Janoš Terzić has published 52 papers in journals in the <i>Web of Science</i> database.</p> <p>As the first or corresponding author, he published 29 papers registered in the Web of Science database and were cited over 3,500 times.</p> <ol style="list-style-type: none"> Bošković M, Roje B, Chung FF, Gelemanović A, Cahais V, Cuenin C, Khoueiry R, Vilović K, Herceg Z, TERZIĆ J. DNA Methylome Changes of Muscle- and Neuronal-Related Processes Precede Bladder Cancer Invasiveness. <i>Cancers (Basel)</i>. 2022;14:487 doi.org/10.3390/cancers14030487 Korac-Prlic J, Degoricija M, Vilovic K, Haupt B, Ivanisevic T, Frankovic L, Grivennikov S, TERZIĆ J. Targeting Stat3 signaling impairs the progression of bladder cancer in a mouse model. <i>Cancer Lett</i>. 2020;490:89-99. Roje B, Elek A, Palada V, Bom J, Iljazovic A, Simic A, Susak L, Vilovic K, Strowig T, Vlahovicek K, TERZIĆ J. Microbiota alters urinary bladder weight and gene expression. <i>Microorganisms</i>. 2020: 8:421. Degoricija M, Korac-Prlic J, Vilovic K, Ivanisevic T, Haupt B, Palada V, Petkovic M, Karaman I, TERZIĆ J. The dynamics of the inflammatory response during

	<p>BBN-induced bladder carcinogenesis in mice. <i>J Transl Med.</i> 2019;17:394</p> <p>5. Popovic Bucevic V, Situm M, Chow CT, Chan LS, Roje B, TERZIĆ J. The urinary microbiome associated with bladder cancer. <i>Sci Rep.</i> 2018 Aug 14;8(1):12157.</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>"The role of inflammation in the development of bladder tumors", Croatian Science Foundation, value: 130,000 euros</p> <p>"The role of microbiota in the development of bladder tumors", Croatian Science Foundation, value 180.000 euros</p> <p>"Putting into operation the newly built housing for experimental animals at the University of Split", EU funded project, value 2,4 million euros</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<p>2014 "Pride of Croatia" annual award</p> <p>2014 Country Prize for Science, annual award</p> <p>2013 Annual prize for science "Slobodna Dalmacija", Europa Press Holding</p> <p>2013. "Dearest Professor", Recognition of graduated medical students of the 2012/13 generation</p> <p>2009. "Best published paper" Award of the University of Split, Faculty of Medicine</p> <p>2001 Annual award "Anton Šercer", Croatian Medical Academy</p> <p>2000. Annual award, Almae Matris Alumni Croatica - UK</p>

Title, name and last name of the course leader	Prof. Tina Tičinović Kurir
Title of the course at the proposed study programme	Pathophysiology with the Basics of Pathology
GENERAL INFORMATION ON COURSE LEADER	
Address	Ninska 16
Telephone number	021/557-871
E-mail address	tticinov@mefst.hr
Personal web page	/
Year of birth	31 st July 1972.
Scientist ID	282292
CROSBi profile ID	28347
Research rank and date of the last appointment	Research advisor, 2021.
Research and teaching or teaching rank, and the date of the last appointment	Professor, 2021.
Area and field of appointment into research rank	Biomedicine and Health; Clinical medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University Hospital Split, University of Split School of medicine
Date of employment	2003; 1999
Job title (professor, researcher, associate teacher, etc.)	Professor, subspecialist of endocrinology and diabetology
Field of research	Pathophysiology, Endocrinology and metabolic disorders
Position in the institution	Head of Department in both institutions
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of medicine
Place	Split
Date	2007
INFORMATION ON ADDITIONAL TRAINING	
Year	2013.
Place	Manchester, Ujedinjeno Kraljevstvo
Institution	Christie Hospital
Field of training	Endocrinologic oncology
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 4
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French, 2
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Head of Department of Pathophysiology since 2009.
Authorship of university textbooks from the field of the course	Tičinović Kurir T i sur. Patofiziologija endokrinopatija. Split: Redak; 2013.
Professional and research papers published in the last five years from the field of the course (max 5 references)	1. Bilalic A, Kurir TT , Borovac JA, Kumric M, Supedomic D, Vilovic M, Martinovic D, Bozic J. Association of Dephosphorylated-Uncarboxylated Matrix Gla Protein and Risk of Major Bleeding in

	<p>Patients Presenting with Acute Myocardial Infarction. Life (Basel). 2021 Jul 23;11(8):733.</p> <p>2. Kumric M, Ticinovic Kurir T, Borovac JA, Bozic J. Role of novel biomarkers in diabetic cardiomyopathy. World J Diabetes. 2021 Jun 15;12(6):685-705.</p> <p>3. Kumric M, Borovac JA, Martinovic D, Ticinovic Kurir T, Bozic J. Circulating Biomarkers Reflecting Destabilization Mechanisms of Coronary Artery Plaques: Are We Looking for the Impossible? Biomolecules. 2021 Jun 14;11(6):881.</p> <p>4. Kumric M, Borovac JA, Ticinovic Kurir T, Martinovic D, Frka Separovic I, Baric L, Bozic J. Role of Matrix Gla Protein in the Complex Network of Coronary Artery Disease: A Comprehensive Review. Life (Basel). 2021 Jul 24;11(8):737.</p> <p>5. Kumrić M, Kurir TT, Borovac JA, Božić J. The Role of Natural Killer (NK) Cells in Acute Coronary Syndrome: A Comprehensive Review. Biomolecules. 2020 Nov 5;10(11):1514.</p>
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	/
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<p>2007 – 2013, "Patobiokemija glikosfingolipidnih antigena", MZOŠ, Croatia</p> <p>2014 – present day, "Translacijsko istraživanje neuroplastičnosti disanja i učinka intermitentne hipoksije u anesteziji i spavanju", HRZZ, Croatia</p>
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Skills course of medical education and scientific work, University of Split School of Medicine
PRIZES AND AWARDS	
Prizes and awards for teaching and research	/

Title, name and last name of the course leader	Asst. Prof. Sanja Tipurić-Spužević
Title of the course at the proposed study programme	Mathematics and Biostatistics
GENERAL INFORMATION ON COURSE LEADER	
Address	Vukovarska cesta 8, Omiš
Telephone number	+385-91-6002-436
E-mail address	stspuzevic@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/ozk-3/kzm
Year of birth	1974.
Scientist ID	381402
CROSBi profile ID	35706
Research rank and date of the last appointment	Research Associate, 16. 12. 2019. god.
Research and teaching or teaching rank, and the date of the last appointment	Assistant professor, 16.12. 2019. god.
Area and field of appointment into research rank	Area of Natural Sciences, field of Mathematics
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology, University of Split
Date of employment	17. 12, 2019.
Job title (professor, researcher, associate teacher, etc.)	Assistant professor
Field of research	Area of Natural Sciences
Position in the institution	/
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Ph.D.
Institution	Faculty of Natural Sciences, Mathematics and Educational Sciences, University of Mostar
Place	Mostar
Date	30. 12. 2014.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Swedish (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	<ul style="list-style-type: none"> - Mathematics 1, PPK at the Faculty of Chemistry and Technology, University of Split - Mathematics 2, PPK and PPKT at the Faculty of Chemistry and Technology, University of Split - Applied mathematics, DPT and DKT-M at the Faculty of Chemistry and Technology, University of Split

	<p>- Probability and statistics, at the Undergraduate Studies Prim./Posl. of computer science at the University of Dubrovnik</p> <p>- Applied statistics, at the Undergraduate Study of Informatics (FPMOZ) of the University of Mostar</p>
Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. T. Došlić, I. Martinjak, R. Škrekovski, S. Tipurić-Spužević, I. Zubac, „Mostar index“, J MathChem, 2018., 2. S. Kovač, J. Pečarić, S. Tipurić-Spužević, The Ostrowski type inequalities with the application to the three point integral formula, Mathematical Inequalities & Applications, 2018. 3. Aglič Aljinović, J. Pečarić, S. Tipurić-Spužević, Generalization of weighted Ostrowski type Inequalities by Abel–Gontscharoff polynomial, Mathematical Inequalities and Applications 4. B. Gotovac, S. Tipurić-Spužević, D. Marić, L. Pavlović, <i>Izračunavanje i primjena diskretne slučajne varijable u kemiji</i>, Evolventa, (JAMTK) 4(1)(2021),47-59
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	Completed study of professorship in mathematics and physics
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Asoc. Prof. Renato Tomaš
Title of the course at the proposed study programme	Physical Chemistry
GENERAL INFORMATION ON COURSE LEADER	
Address	Faculty of Chemistry and Technology (FCT), University of Split, Ruđera Boškovića 35, 21000 Split, Croatia
Telephone number	0989874677
E-mail address	rtomas@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/kontakt-3/kontakt-djelatnici/item/tomas-renato
Year of birth	1967
Scientist ID	226242
CROSBİ profile ID	28443
Research rank and date of the last appointment	
Research and teaching or teaching rank, and the date of the last appointment	Associate Professor April, 2014
Area and field of appointment into research rank	Natural science; chemistry; physical chemistry.
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology (FCT), University of Split
Date of employment	March, 1994.
Job title (professor, researcher, associate teacher, etc.)	Professor
Field of research	Thermodynamics and transport properties of electrolytes; solution chemistry; ionic liquids
Position in the institution	Associate Professor of Physical Chemistry
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	FCT, University of Split
Place	Split
Date	October, 29 2002
INFORMATION ON ADDITIONAL TRAINING	
Year	2008
Place	Zagreb
Institution	Department of Chemistry, Faculty of Science, University of Zagreb
Field of training	Calixarene chemistry
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (4)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course	Lectures and seminars: Physical Chemistry 1, Physical Chemistry 2, Basic of Physical Chemistry, Physical Chemistry

teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	of Electrolyte Solutions, Colloid Chemistry, Selected Topics in Physical Environmental Chemistry.
Authorship of university textbooks from the field of the course	J. Radošević, V. Sokol, R. Tomaš , P. Bošković, Laboratory exercises in Physical Chemistry, University of Split, 2016.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> R. Tomaš, A. Tot, J. Kuhar, M. Bešter-Rogač, Interactions in aqueous solutions of imidazolium chloride ionic liquids (C_nmim)(Cl) (n = 0, 1, 2, 4, 6, 8) from volumetric properties, viscosity B-coefficients and molecular dynamic simulations, <i>Journal of molecular liquids</i>, 254 (2018) 267-271. N. Čindro, J. Požar, D. Barišić, N. Bregović, K. Pičuljan, R. Tomaš, L. Frkanec, V. Tomišić, Neutral Glycoconjugated Amide-Based Calix[4]arenes: Complexation of Alkali Metal Cations in Water, <i>Organic & biomolecular chemistry</i>, 16 (2018) 904-912. R. Tomaš, Imidazolium-based ionic liquids: some research methods, applications and physico-chemical properties, <i>Croatica chemica acta</i>, 94 (2021) 83-94. R. Tomaš, Z. Kinart, A. Tot, S. Papović, T. T. Borović, M. Vraneš, Volumetric properties, conductivity and computation analysis of selected imidazolium chloride ionic liquids in ethylene glycol, <i>Journal of molecular liquids</i>, 345 (2022) 118178. M. Vraneš, T. T. Borović, P. Drid, T. Trivić, R. Tomaš, N. Janković, Influence of Sodium Salicylate on Self-Aggregation and Caffeine Solubility in Water - A New Hypothesis from Experimental and Computational Data, <i>Pharmaceutics</i>, 14 (2022) 2304.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	R. Tomaš , R. Vladušić, SIGNIFICANCE OF EXPERIMENT IN THE TEACHING PROCESS – APPLICATION OF POTENTIOMETRIC EXPERIMENT AS EXAMPLE , <i>PROCEEDINGS BOOK</i> , 632, Dubai, UEA, Sakarya University, 2016.
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	<ol style="list-style-type: none"> Project "MakroSol" – Croatian Science Foundation: Coordination reactions of macrocyclic ligands in solution, University of Zagreb, 2019-2024. COST Action, CA18202 - Network for Equilibria and Chemical Thermodynamics Advanced Research (NECTAR): 2021-2024, EU, member from Croatia.
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Prof. Siniša Tomić
Title of the course at the proposed study programme	Pharmaceutical nomenclature, Research and Development of Medicines
GENERAL INFORMATION ON COURSE LEADER	
Address	Ksaverska vesta 4, 10 000 Zagreb
Telephone number	01 4884 100
E-mail address	sinisa.tomic@halmed.hr
Personal web page	https://www.bib.irb.hr/pregled/profil/28534
Year of birth	1965
Scientist ID	243125
CROSBİ profile ID	28534
Research rank and date of the last appointment	Scientific advisor, 10 October, 2012
Research and teaching or teaching rank, and the date of the last appointment	Professor, 23 June 2020
Area and field of appointment into research rank	Biomedicine and health, Basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Croatian Agency for Medicinal Products and Medical Devices (HALMED)
Date of employment	October 1 2003
Job title (professor, researcher, associate teacher, etc.)	Head of Agency
Field of research	Regulatory science
Position in the institution	Manages and runs Agency's operations in compliance with law, Agency's Statute and the decisions of Administration Board
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	Doctor rerum naturalium
Institution	Friedrich Schiller University
Place	Jena, Germany
Date	June, 2006
INFORMATION ON ADDITIONAL TRAINING	
Year	1997.-1999.
Place	Montréal
Institution	McGill University
Field of training	Prolactin receptor signaling
Year	1996.-1997
Place	Montréal
Institution	Biotechnology Research Institute
Field of training	PTP1E interactions
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	French (5)

Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Italian (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	Slovenian (5)
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	Registration and vigilance of medicines and medical devices (PhD Programme „Biomedicine & Health“, J.J. Strossmayer University, Osijek) Pharmacognosy (Bachelor's Programme „Biotechnology & Drug Research“, Department of Biotechnology, University of Rijeka) Health Legislation (Integrated Bachelor's & Master's Programme „Medical Biochemistry“, Faculty of Pharmacy and Biochemistry, University of Zagreb)
Authorship of university textbooks from the field of the course	Co-author of two chapters in the book „Clinical Pharmacology, second, supplemented and modified edition“, I. Francetić and D. Vitezić, Medicinska naklada, Zagreb, 2014 Croatian Pharmacopoeia with commentaries 2007 (editor)
Professional and research papers published in the last five years from the field of the course (max 5 references)	1. Sedlo I, Kolonić T, Tomić S. Arh Hig Rada Toksikol. 2021;72:1-5. 2. Bukić J, Rusic D, Mas P, Karabatic D, Bozic, J, Seselja Perisin A, Leskur D, Krnic D, Tomic S, Modun D. Analysis of spontaneous reporting of suspected adverse drug reactions for non-analgesic over-the-counter drugs from 2008 to 2017. BMC Pharmacol & Toxicol. 2019;20:60. 3. Knežević E, Rušić D, Bukić J, Božić J, Šešelja Perišin A, Leskur D, Modun D, Tomić S. Review of incentives for pediatric drug development and of the number of phase III clinical trials in selected countries. Medicina Fluminensis. 2019;4:337-345. 4. Zorić N, Kosalec I, Tomić S, Bobnjarić I, Jug M, Vlainić T, Vlainić J. Membrane of <i>Candida albicans</i> as a target of berberine. BMC Complement Altern Med. 2017;17:268. 5. Zorić N, Kopjar N, Bobnjarić I, Horvat I, Tomić S, Kosalec I. Antifungal Activity of Oleuropein against <i>Candida albicans</i> -The In Vitro Study. Molecules. 2016;21:1631.
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	„Biologic active compounds, metabolites and QSAR“, researcher (No.: 006-0061117-1237; leader: professor Marica Medić-Šarić, PhD) „Excytotoxicity and neuroprotection in epilepsy and brain ischemia“, researcher

	(No.: 0062049, leader: Professor Gordana Župan, MD, PhD, 2002-2006)
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	Diploma of the Croatian Pharmaceutical Society for dedicated work in the Association, 2009 Professor Julije Domac Medal, Croatian Pharmaceutical Society, 2019

Title, name and last name of the course leader	Prof. Marija Tonkić
Title of the course at the proposed study programme	Pharmaceutical Microbiology
GENERAL INFORMATION ON COURSE LEADER	
Address	Spinčićeva 1, 21 000 Split
Telephone number	+385 21 556 206
E-mail address	mtonkic@kbsplit.hr
Personal web page	
Year of birth	1960
Scientist ID	217650
CROSBİ profile ID	28591
Research rank and date of the last appointment	Scientific adviser in a permanent position, 20.10. 2021
Research and teaching or teaching rank, and the date of the last appointment	Full professor, 25.11. 2021
Area and field of appointment into research rank	Biomedicine and Health, Clinical Medical Sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	2008
Job title (professor, researcher, associate teacher, etc.)	Full professor
Field of research	Medical microbiology and parasitology
Position in the institution	Head of the Department
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split School of Medicine
Place	Split
Date	2006
INFORMATION ON ADDITIONAL TRAINING	
Year	1989-1994; 1996
Place	Zagreb
Institution	University Hospital for Infectious Diseases „ Dr. Fran Mihaljević“, Croatian Institute for Public Health, University of Zagreb School of Medicine Numerous workshops and seminars (at home and abroad).
Field of training	Clinical microbiology and parasitology
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English (5)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	German (3)
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it	Course: Medical microbiology and parasitology Study programmes: Medical Studies in English, Dental Medicine, Pharmacy

is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	<ol style="list-style-type: none"> 1. Tonkić M. Helicobacter. U: Uzunović-Kamberović S, ur. Medicinska mikrobiologija. Zenica: Štamparija Fojnica; 2009, str. 483-487. 2. Tonkić M. Mikrobiološka dijagnostika infekcija u ginekologiji i perinatologiji. U: Karelović D, ur. Infekcije u ginekologiji i perinatologiji. Zagreb: Medicinska naklada: 2012. Str. 118-133. 3. Tonkić M i sur. Medicinska mikrobiologija. Praktikum za vježbe za studente Dentalne medicine. Split: Redak:2015. 4. Tonkić M. Interpretacija seroloških nalaza. U: Beder N, Bedenić B, Budimir A, ur. Klinička mikrobiologija – odabrana poglavlja. Zagreb: Medicinska naklada: 2019. Str. 296-304. 5. Tonkić M i sur. Medicinska mikrobiologija. Praktikum za vježbe za studente Medicine. Split: Redak:2022. 6. Tonkić M i sur. Medical microbiology. Practicum for medical students. Split: Redak:2022.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Juretic D, Sonavana Y, Ilic N, Gajski G, Goic-Barisic I, Tonkic M, et al. Designed peptide with a flexible central motif from ranatuerins adapts its conformation to bacterial membranes. <i>Biochimica et Biophysica Acta-Biomembranes</i>. 2019; 1860:2655-8. 2. Rubic Z, Soprek S, Jelic M, Novak A, Goic-Barisic I, Radic M, Tambic-Andrasevic A, Tonkic M. Molecular Characterization of β-Lactam Resistance and Antimicrobial Susceptibility to Possible Therapeutic Options of AmpC-Producing Multidrug-Resistant <i>Proteus mirabilis</i> in a University Hospital of Split, Croatia [published online ahead of print, 2020 May 19]. <i>Microb Drug Resist</i>. 2020;10.1089/mdr.2020.0002. doi:10.1089/mdr.2020.0002 3. Megraud F, Bruyndonckx R, Coenen S, Wittkop L, Huang TD, Hoebeke M, Bénéjat L, Lehours P, Goossens H, Glupczynski Y; European Helicobacter pylori Antimicrobial Susceptibility Testing Working Group. <i>Helicobacter pylori</i> resistance to antibiotics in Europe in 2018 and its relationship to antibiotic consumption in the community. <i>Gut</i>. 2021 Oct;70(10):1815-1822. doi: 10.1136/gutjnl-2021-324032. Epub 2021 Apr 9. PMID: 33837118. 4. Perkovic N, Mestrovic A, Bozic J, Ivelja MP, Vukovic J, Kardum G, Sundov Z, Tonkic M, Puljiz Z, Vukojevic K, Tonkic A. Randomized Clinical Trial Comparing Concomitant and Tailored Therapy for Eradication of <i>Helicobacter pylori</i> Infection. <i>J Pers Med</i>. 2021 Jun 9;11(6):534. doi: 10.3390/jpm11060534. PMID: 34207870; PMCID: PMC8229321. 5. Perkovic N, Mestrovic A, Bozic J, Ivelja MP, Vukovic J, Kardum G, Sundov Z, Tonkic M, Puljiz Z, Vukojevic K, Tonkic A. Randomized Clinical Trial Comparing Concomitant and Tailored Therapy for Eradication of <i>Helicobacter pylori</i> Infection. <i>J Pers Med</i>. 2021 Jun 9;11(6):534. doi: 10.3390/jpm11060534. PMID: 34207870; PMCID: PMC8229321.

Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	2015 – 2019 - researcher and collaborator - project IP-2014-09-5656 "Natural habitat of clinically significant <i>Acinetobacter baumannii</i> " (NATURACI) wwwhttp://www.pmf.unizg.hr/naturaci/ 2015-2017 - researcher - project IP 8481 "Biophysical design of antimicrobial peptides and innovative molecular descriptors"
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	2020 -Thank you note from the Faculty of Medicine of the University of Mostar for continuous and selfless help on the way to development and growth

Title, name and last name of the course leader	Prof. Zoran Valić
Title of the course at the proposed study programme	Physiology
GENERAL INFORMATION ON COURSE LEADER	
Address	Šoltanska 2; 21000 Split
Telephone number	021 557-945
E-mail address	zoran.valic@mefst.hr
Personal web page	
Year of birth	1972
Scientist ID	253185
CROSBİ profile ID	28968
Research rank and date of the last appointment	Research advisor, 30. 10. 2006.
Research and teaching or teaching rank, and the date of the last appointment	Tenured full professor, 29. 9. 2016.
Area and field of appointment into research rank	Biomedicine and health, Basic medical sciences
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	University of Split School of Medicine
Date of employment	2. 5. 2001.
Job title (professor, researcher, associate teacher, etc.)	Tenured full professor
Field of research	Physiology
Position in the institution	Head of Department of integrative physiology
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	University of Split
Place	Split
Date	13. 12. 2002.
INFORMATION ON ADDITIONAL TRAINING	
Year	1998-2001, 2005
Place	Milwaukee, WI, USA
Institution	Medical College of Wisconsin
Field of training	Physiology
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	1. Berović, Nina; Božić, Joško; Bratanić, Andre; Dogas, Zoran; Kokić, Slaven; Korljan Jelaska, Betty; Krnić, Mladen; Kovačić, Vedran; Ljutić, Dragan; Markotić, Antita; Novak, Anela; Pecotic, Renata; Radić, Josipa; Radić, Mislav; Radman, Maja;

	Škrabić, Veselin; Tičinović Kurir, Tina; Valic, Zoran; Živković, Piero Marin. Patofiziologija endokrinopatija : odabrana poglavlja / Tičinović Kurir, Tina (ur.). Split : Redak, 2013. 2. Soldo, Alen; Valic, Zoran; Glavičić, Igor; Jurman, Bojan; Drviš, Ivan. Ronjenje / Soldo, Alen ; Glavičić, Igor ; Kolman, Milan (ur.). Samobor : Sveučilište u Splitu ; Hrvatska olimpijska akademija, 2013. 3. translation of textbook. Medical Physiology . 2006. - today
Professional and research papers published in the last five years from the field of the course (max 5 references)	1) Zubac, D., V. Ivančev, Z. Valić, and B. Šimunič. Long-lasting exercise involvement protects against decline in VO ₂ max and VO ₂ kinetics in moderately active women. <i>Appl. Physiol. Nutr. Metab.</i> 46(2): 108-116, 2021. 2) Zubac, D., A. Obad, V. Ivančev, and Z. Valić. Acute flywheel exercise does not impair the brachial artery vasodilation in healthy men of varying aerobic fitness. <i>Blood Press. Monit.</i> 26(3): 215-223, 2021. 3) Zubac, D., N. Goswami, V. Ivančev, Z. Valic, and B. Šimunič. Independent influence of age on heart rate recovery after flywheel exercise in trained men and women. <i>Sci. Rep.</i> 11(1): 12011, 2021. 4) Zubac, D., V. Ivančev, Z. Valić, R. Pišot, J.W. Cécil, I. Trozic, N. Goswami, and B. Šimunič. A randomized crossover trial on the acute cardiovascular demands during flywheel exercise. <i>Front. Physiol.</i> 12:665462, 2021. 5) Zubac, D., A. Obad, A. Bosnjak, M. Zec, V. Ivančev, and Z. Valić. Spleen emptying does not correlate with faster oxygen kinetics during a step-transition supine cycling. <i>Appl. Physiol. Nutr. Metab.</i> (in press, 10.1139/apnm-2021-0294).
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	Biological, chronological and relative age in establishing the Croatian sports talent system. IP-2020-02-3366. 2021-2025. Coinvestigator.
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	
PRIZES AND AWARDS	
Prizes and awards for teaching and research	2003. Award from The Academy of Medical Sciences of Croatia «Borislav Nakić» for the most valuable medical publication from the author under 35 years of age 2004. National Science Award – Annual Award for Junior Researchers 2006. Award from The Academy of Medical Sciences of Croatia «Ante Šerčer» for the most valuable medical publication

Title, name and last name of the course leader	Asst. Prof. Nives Vladislavić
Title of the course at the proposed study programme	Basics of Bioinorganic Chemistry
GENERAL INFORMATION ON COURSE LEADER	
Address	Ruđera Boškovića 35/IV floor
Telephone number	+38521329-474
E-mail address	nives.vladislavic@ktf-split.hr
Personal web page	https://www.ktf.unist.hr/index.php/kontakt-3/kontakt-djelatnici/item/vladislavic-nives
Year of birth	1975.
Scientist ID	287216
CROSBİ profile ID	29276
Research rank and date of the last appointment	Research Associate, 15. 11. 2018.
Research and teaching or teaching rank, and the date of the last appointment	Assistant Professor, 4. 4. 2019.
Area and field of appointment into research rank	Natural sciences - chemistry field
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Faculty of Chemistry and Technology
Date of employment	May 2, 2006.
Job title (professor, researcher, associate teacher, etc.)	Assistant Professor
Field of research	Natural sciences, field of chemistry General chemistry, Inorganic chemistry
Position in the institution	Assistant Professor
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD (in chemistry)
Institution	Faculty of Chemical Engineering and Technology
Place	Zagreb
Date	18. 12. 2014.
INFORMATION ON ADDITIONAL TRAINING	
Year	
Place	
Institution	
Field of training	
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 3
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it	

is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Škugor Rončević, Ivana; Vladislavić, Nives; Chatterjee, Nabanita; Sokol, Vesna; Oliver, Clive L.; Kukovec, Boris-Marko. Structural and Electrochemical Studies of Cobalt(II) and Nickel(II) Coordination Polymers with 6-Oxonicotinate and 4,4'-Bipyridine // <i>Chemosensors</i>, 9 (2021), 12; 352, 13 doi:10.3390/chemosensors9120352. 2. Škugor Rončević, Ivana; Buzuk, Marijo; Buljac, Maša; Vladislavić, Nives, The Preparation, Morphological Characterization and Possible Electroanalytical Application of Hydroxyapatite Modified Glassy Carbon Electrode, <i>Crystals</i>, 11 (2021), 7; 772, 13 doi:10.3390/cryst11070772 3. Škugor Rončević Ivana, Vladislavić Nives, Buzuk Marijo, Buljac Maša, Electrodeposition of hydroxyapatite coating on Mg alloy modified with organic acid self- assembled monolayers, <i>Journal of chemical research</i>, 44 (2020), 3-4; 212-220 doi:10.1177/1747519819895980 4. Vladislavić, Nives; Škugor Rončević, Ivana; Buzuk, Marijo; Buljac, Maša; Drventić Ivana, Electrochemical/chemical synthesis of Hydroxyapatite on glassy carbon electrode for electroanalytical determination of cysteine, <i>Journal of solid state electrochemistry</i>, 25 (2020), 841-857 doi:10.1007/s10008-020-04856-z 5. Škugor Rončević, Ivana; Vladislavić, Nives; Buzuk, Marijo, Surface modifications of the biodegradable magnesium based implants with self-assembled monolayers formed by T-BAG method, <i>Acta chimica Slovenica</i>, 65 (2018), 698-708 doi:10.17344/acsi.2018.4400
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	
Professional and research projects from the field of the course carried out in the last five years (max 5 references)	
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	<ol style="list-style-type: none"> 1. Participation in the workshop "Active Learning in STEM Education". 2. Participation in the professional seminar: "Development and improvement of pedagogical competencies of university teachers". 3. Professional training at professional meetings of the inter-county expert council of CHEMICAL TECHNOLOGIES, (2015, 2016, 2017)
PRIZES AND AWARDS	
Prizes and awards for teaching and research	

Title, name and last name of the course leader	Prof. Eduard Vrdoljak
Title of the course at the proposed study programme	Oncological Pharmacy
GENERAL INFORMATION ON COURSE LEADER	
Address	Pazdigradska 46, Split
Telephone number	021 556 129
E-mail address	Edo.vrdoljak@gmail.com
Personal web page	
Year of birth	1964.
Scientist ID	205415
CROSBI profile ID	29490
Research rank and date of the last appointment	Scientist counsellor
Research and teaching or teaching rank, and the date of the last appointment	Permanent professor, 2007.
Area and field of appointment into research rank	Oncology
INFORMATION ON CURRENT EMPLOYMENT	
Institution of employment	Clinical Hospital Split, Clinic of oncology and radiotherapy
Date of employment	1992.
Job title (professor, researcher, associate teacher, etc.)	Oncology and radiotherapy specialist
Field of research	Oncology and radiotherapy
Position in the institution	Head of the clinic
INFORMATION ON EDUCATION – Highest degree achieved	
Degree	PhD
Institution	Medical school Zagreb
Place	Split
Date	1995.
INFORMATION ON ADDITIONAL TRAINING	
Year	1992.
Place	Houston
Institution	MD Anderson
Field of training	Oncology
MOTHER TONGUE AND FOREIGN LANGUAGES	
Mother tongue	Croatian
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	English, 5
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
Foreign language and command of foreign language on a scale from 2 (sufficient) to 5 (excellent)	
COMPETENCES FOR THE COURSE	
Earlier experience as course teacher of similar courses (title of course, study programme where it	Medical school Split, teaching since 1992.

is/was held, and level of study programme)	
Authorship of university textbooks from the field of the course	Klinička onkologija, medical school book, published 2006., 2013., 2018.
Professional and research papers published in the last five years from the field of the course (max 5 references)	<ol style="list-style-type: none"> 1. Petrić Miše B, Pešo M, Hrepić D, Telesmanić Dobrić V, Vrdoljak E. Treatment outcomes of patients with BRCA-mutated, recurrent ovarian cancer in University Hospital Center Split. <i>Lib. Oncol.</i> 2022;50(1):16-26, doi:10.20471/LO.2022.50.01.04 2. Čerina D, Boraska Jelavić T, Buljubašić Franić M, Tomić K, Bajić Ž, Vrdoljak E. Is There a Place for Adjuvant Chemotherapy in the Treatment of Locally Advanced Cervical Cancer? <i>Curr Oncol.</i> 2022 Jul 23;29(8):5223-5237. doi: 10.3390/curroncol 29080415. 3. Lawler M, Davies L, Oberst S, Oliver K, Eggermont A, Schmutz A, La Vecchia C, Allemani C, Lievens Y, Naredi P, Cufer T, Aggarwal A, Aapro M, Apostolidis K, Baird AM, Cardoso F, Charalambous A, Coleman MP, Costa A, Crul M, Dégi CL, Di Nicolantonio F, Erdem S, Geanta M, Geissler J, Jassem J, Jagielska B, Jonsson B, Kelly D, Kelm O, Kolarova T, Kutluk T, Lewison G, Meunier F, Pelouchova J, Philip T, Price R, Rau B, Rubio IT, Selby P, Južnič Sotlar M, Spurrier-Bernard G, van Hove JC, Vrdoljak E, Westerhuis W, Wojciechowska U, Sullivan R. European Groundshot-addressing Europe's cancer research challenges: a Lancet Oncology Commission. <i>Lancet Oncol.</i> 2022 Nov 15:S1470-2045(22)00540-X. doi: 10.1016/S1470-2045(22)00540-X. Online ahead of print. PMID: 36400101 Review. 4. Tankova T, Senkus E, Beloyartseva M, Borštnar S, Catrinoiu D, Frolova M, Hegmane A, Janež A, Krnić M, Lengyel Z, Marcou Y, Mazilu L, Mrinakova B, Percik R, Petrakova K, Rubovszky G, Tokar M, Vrdoljak E. Management Strategies for Hyperglycemia Associated with the α-Selective PI3K Inhibitor Alpelisib for the Treatment of Breast Cancer. <i>Cancers (Basel).</i> 2022 Mar 22;14(7):1598. doi: 10.3390/cancers14071598. PMID: 35406370 5. Čerina D, Matković V, Katić K, Belac Lovasić I, Šeparović R, Canjko I, Bajić Ž, Vrdoljak E. Comprehensive Genomic Profiling in the Management of Ovarian Cancer-National Results from Croatia. <i>J Pers Med.</i> 2022 Jul 19;12(7):1176. doi: 10.3390/jpm12071176. PMID: 35887672
Professional and research papers In methodology and quality of teaching published in the last five years (max 5 references)	N/A
Professional and research projects from the field of the	<ol style="list-style-type: none"> 1. Impact of time of alpelisib administration, concomitant fasting and low carbohydrate diet on alpelisib toxicity

course carried out in the last five years (max 5 references)	and efficacy; a pilot randomized controlled phase IIb trial – ITACA 2. PRecision Cancer MEdicine RepurpOsing SystEm Using Pragmatic Clinical Trials – PRIME – ROSE - HORIZON-MISS-2022-CANCER-01 3. Digital TRANSition and dlgiTal resllience in Oncology – TRANSITION – EU4H- 2022- PJ06
Within which program and to what extent did the course teacher acquire methodological, psychological, didactic and pedagogical competencies?	oncology
PRIZES AND AWARDS	
Prizes and awards for teaching and research	<ul style="list-style-type: none"> • Travelers Award, 10th International Congress of Radiation Research Young Scientist, 1995. • World Association of Croatian Physicians Fellowship Award 1995 (MD Anderson Cancer Canter, Houston, TX, USA, February and March 1996. • The best paper acknowledgement, First Croatian Oncology Congress, Plitvice, 2001. • Croatian science and art academy award; Republic of Croatia's greatest scientific accomplishments in the field of medical science – 2008 • Town of Split's personal award – 2008 • Science national award – 2014 • Science award for the best ranked scientists of the University in the Thomson Reuters Web of Science database, 2017

3.4. Optimal number of students

Optimal number of students per year is 30.

3.5. Estimate costs per student

Annual study costs are around 8000 Kn per student.

3.6. Plan of procedures of study programme quality assurance

<p>In keeping with the European standards and guidelines for internal quality assurance in higher education institutions (according to “Standards and Guidelines of Quality Assurance in the European Higher Education Area”) on the basis of which the University of Zagreb defines procedures for quality assurance, the proposer of the study programme is obliged to draw up a plan of procedures of study programme quality assurance.</p>	
<p>Documentation on which the quality assurance system of the constituent part of the University is based:</p>	
<ul style="list-style-type: none"> • Rulebook on the quality improvement system at USSM ¹⁵ 	
<ul style="list-style-type: none"> • Handbook on quality assurance at USSM ¹⁶ 	
<ul style="list-style-type: none"> • Rulebook on the procedure of internal periodic assessment of the quality assurance system ¹⁷ 	
<p>Description of procedures for evaluation of the quality of study programme implementation:</p> <ul style="list-style-type: none"> • For each procedure the method needs to be described (most often questionnaires for students or teachers, and self-evaluation questionnaire), name the body conducting evaluation (constituent part, university office), method of processing results and making information available, and timeframe for carrying out evaluation • If procedure is described in an attached document, name the document and the article. 	
<p>Evaluation of the work of teachers and part-time teachers</p>	<p>The process of student evaluation of teaching is conducted by the Centre / Department for quality in cooperation with the Committee for quality improvement of the departments. The procedure consists of: informing students and teachers, student questionnaire surveys, questionnaire analysis and presentation of results and measures for improving quality. The procedure is described in detail in the Guidelines for conducting student evaluation of teaching, University of Split. Survey is conducted on the last day of each teaching cycle. Analysis and delivery of survey results is the responsibility of the Centre / Department for the quality. Summary of the results for each department are presented to the Dean and to the President of the Committee for Quality Improvement. After analyzing the results of student surveys, dean holds informative meetings with the 10% of</p>

¹⁵ <https://neuron.mefst.hr/docs/dokumenti/pravilnici/2019/Pravilnik%20o%20sustavu%20za%20unaprije%C4%91enje%20kvalitete.pdf?vel=304822>

¹⁶ <https://neuron.mefst.hr/docs/dokumenti/pravilnici/2019/Priru%C4%8Dnik%20osiguravanja%20kvalitete.pdf?vel=3982851>

¹⁷ <https://neuron.mefst.hr/docs/dokumenti/pravilnici/2019/Pravilnik%20o%20postupku%20unutarnje%20periodi%C4%8Dne%20rosudbe%20sustava%20osiguravanja%20kvalitete.pdf?vel=217721>

	<p>the worst-rated teachers and informs the Rector. Also, departments that have received lower ratings hold meetings on improving the quality of teaching. Our School, in accordance with the Regulations on rewards and recognition, rewards each year best teachers, associates and departments according to the results of student surveys.</p>
<p>Monitoring of grading and harmonization of grading with anticipated learning outcomes</p>	<p>The assessment of students at our School is carried out during classes (continuous evaluation) and during the exams. In student assessment the compliance of literature and teaching, as well as literature and the contents of the exam is particularly important. On the School website, under "Department" the curriculum of each department is specified. All teachers are listed in tables along with teaching schedules and units accompanied by chapters from books that are required reading. For written exams, scoring systems are explained in detail. Everything listed above contributes to the organization and execution of teaching, and to better communication with students. The assessment of the acquired knowledge through written exams has become the standard that is applied to all School programs. Committee for teaching, Committee for supervision of the teaching and Committee for Quality Improvement are all involved in the monitoring of the implementation of these procedures.</p>
<p>Evaluation of availability of resources (spatial, human, IT) in the process of learning and instruction</p>	<p>Evaluation of the availability of resources is partly carried out through a questionnaire for student evaluation of expert and administrative services and partly through the evaluation of the overall study program. Evaluation is conducted by the Department / Centre for Quality in cooperation with the Committee for Quality Improvement. The survey is conducted at the end of each academic year. The data is processed and the results are submitted to the Department for quality.</p>
<p>Availability and evaluation of student support (mentorship, tutorship, advising)</p>	<p>After enrolling in the first year, each student is assigned an advisor. The goal of this feature is providing assistance and guidance to students in order to master curriculum as easy as possible. Student Counseling Center has been established at USSM in order to help students with various problems during education and preserve mental health.¹⁸</p>
<p>Monitoring of student pass/fail rate by course and study programme as a whole</p>	<p>The process of monitoring student rate of transition is conducted by the Centre / Department for quality using a questionnaire filled out by the School. This activity is carried out once a year at the beginning of the academic</p>

¹⁸ <https://mefst.unist.hr/fakultet/savjetovaliste/11842>

	<p>year for the previous academic year. Also, our School carries out internal analysis of students for each subject, exam and program after the first exam period, and before the autumn exam period, and the end of the academic year. The procedure is implemented by Student administration, Office for teaching and the departments. The results of rate of transition are discussed in the meetings of the Committee for teaching.</p>
<p>Student satisfaction with the programme as a whole</p>	<p>The process of student evaluation of the entire study program is conducted by the Department for quality in cooperation with the Committee for Quality Improvement and Student administration. This procedure is carried out electronically using EVASYS platform after the defense of the final thesis, and the data processing is conducted by the Department for quality. The results are submitted to the Dean and to the President of the Committee for Quality Improvement. The results of the survey are discussed among dean and vice deans, the Committee for teaching and the Committee for Quality Improvement.</p>
<p>Procedures for obtaining feedback from external parties (alums, employers, labour market and other relevant organizations)</p>	<p>The Alumni Association of USSM has been founded, and the Alumni web portal and application were launched.¹⁹ USSM is in contact with the Croatian Pharmaceutical Chamber, the Croatian Employment Service (regional office Split) and other stakeholders, and follows the trends and rates of employment of the staff we train.</p>
<p>Evaluation of student practical education (where this applies)</p>	<p>not applicable</p>
<p>Other evaluation procedures carried out by the proposer</p>	<p>/</p>
<p>Description of procedures for informing external parties on the study programme (students, employers, alums)</p>	<p>On the University of Split School of Medicine website (https://mefst.unist.hr) and Faculty of Chemistry and Technology website (www.ktf.unist.hr) all necessary information on study programs, admission requirements and enrollment quotas are provided. Our opinion is that personal contact with potential students is very important and we attend the "The University Fair" each year. We are broadening the presentation of our School by participating in numerous festivals such as "Summer Science Factory", "Festival of Science", "Brain awareness week" since such events are often attended by prospective students. A significant contribution to presentation of our School is brought by the Herald published by the staff and the students of the School biannually since 2007. We also published the "First student guide for freshmen." These publications, although</p>

¹⁹ <https://mefst.unist.hr/znanost/novosti-2567/web-portal-i-aplikacija-alumni-mefst/11957>

	intended for students already enrolled, can serve as an excellent source of information for all concerned.
--	------------------------------------------------------------------------------------------------------------