Course Curriculum: Medical Physics and Biophysics (2025./2026.)

Subject	Lecturer	Location	Literature
Part 1: Physics of diagnostic imaging			
SP/2: Introduction to measurements	Boban	A430	Web
L1/1: Introduction	Raguž	A116	Web
L2/2: Basics of nuclear physics	Raguž	A116	Web
L3/2: Radiation and matter	Raguž	A116	Web
E1/2: Radioactivity and radiation protection	Boban	A430	Web
S1/2: Physical basis of nuclear medicine	Raguž	SG 1: B103 SG 2: B104	Web
Physics of Nuclear Medicine			
S2/2: Recapitulation seminar I	Raguž	SG 1: B103 SG 2: A430	Web
E2/2: Absorbed radiation dose	Barić	Firule, Department of nuclear medicine	Web
E3/2: Measurements in nuclear medicine	Brdar	Firule, Department of nuclear medicine	Web
S3/2: Physics of MR imaging	Raguž	SG 1: B102 SG 2: A117	Web
Radiology Physics			
S4/2: Physics of diagnostic radiology	Raguž	SG 1: B103 SG 2: B104	Web
E4/2: Radiogram contrasts	Hrepić	Firule, Department of Oncology	Web
Physics of ultrasound imaging			
S5/2: Ultrasound physics	Raguž	SG 1: B103 SG 2: B103	Web
Integration			
L4/2: Comparison of diagnostic methods	Raguž	B104	Web
S6/2: Recapitulation seminar II	Raguž	SG 1: B103 SG 2: B101	Web
Part 2: Biophysical basis of phyisiology			
S7/3: Biotransports, resting potential	Raguž	SG 1: B101 SG 2: A117	Web
S8/2: Action potential	Raguž	SG 1: B101 SG 2: B103	Web
S9/2: Potentials on the surface of the body	Raguž	SG 1: B103 SG 2: B103	Web
S10/2: Recapitulation seminar III	Raguž	SG 1: B101 SG 2: B101	Web
Biophysics of senses			
L5/2: Biophysics of senses, ear and hearing	Raguž	B104	Web/Pope
S11/2: Biophysics of eye and sight	Raguž	SG 1: B104 SG 2: B104	Pope

S12/2: Recapitulation seminar IV	Raguž	SG 1: B103 SG 2: B104	Web
Biomechanics			
S13/2: Biomechanics of tissues	Raguž	SG 1: B103 SG 2: B103	Web
S14/2: Body biomechanics	Raguž	SG 1: A430 SG 2: B102	Web
S15/2: Recapitulation seminar V	Raguž	SG 1: B101 SG 2: B101	Web
Physics of heart and circulation			
L6/2: Hemorheology	Raguž	A116	Web
S16/2: Heart as a pump – straining of the blood vessels	Raguž	SG 1: B102 SG 2: B102	Web
S17/2: Workings of the heart, arteries	Raguž	SG 1: B102 SG 2: B102	Web
S18/2: Recapitulation seminar VI	Raguž	SG 1: B102 SG 2: B102	Web

11 L + 36 S + 23 E

L = lecture; S = seminar; E = exercise;

MEFST = School of Medicine, Šoltanska 2

The Department of Oncology and Department of Nuclear medicine are located at the University Hospital Split location Firule (Spinčićeva 1)

Practical exercises:

The practical (marked PC in the performance schedule) consists of five exercises (PE1 – PE5) that are held cyclically for each exercise group in teams of two. Student teams and the schedule of practical exercises for each exercise and team are listed in the list of students.

Students are required to prepare for each exercise in advance and perform the exercise independently. During the exercise, it is necessary to go through all the tasks listed in the preparatory materials (available on the course website) and submit the measurements accompanied by conclusions to the teacher in the form of a written report at the end of the exercise. In case of absence from the exercise or if the teacher assesses that the report is unsatisfactory, students are obliged to take a written colloquium at the end of the course. In case of failing the colloquium, the student will not be able to take the written exam at the current exam term.

List of practical exercises:

PE1: Echogram resolution

PE2: Audiometry

PE3: Optical bench

PE4: Viscosity

PE5: Hemorheology

All practical exercises will be held in laboratory A426.

Literature:

Materials accessible on Faculty web pages cover most of the topics.

Additional literature: 1. JA Pope: Medical Physics (second edition); Heinemann, 1989.

Students' obligations

Students have to attend all course lectures, seminars and exercises. Up to 20% of **justified** absence from seminars and lectures can be tolerated. If a student doesn't appear for an exercise, he/she will have to take a short exam related to that exercise. Students are expected to participate actively during the course.

There are two types of seminars.

The first type is described in the course curriculum by a name of the topic to be covered. The names in the curriculum correspond to the chapter titles in the literature. Seminars are interactive. The teacher explains the topic at hand and can pose questions to the students in order to assess their current knowledge. Students are expected to prepare the content of corresponding seminars in advance.

The second type of seminar is a recapitulation seminar. The goal of this type of seminar is to address the most common issues regarding the topics covered during few previous lectures and seminars.

During recapitulation seminars (second seminar type), depending on the demonstrated understanding of the subject, a student can be awarded a plus. One plus equals one point on the

written exam. Only one plus per recapitulation seminar can be obtained by one student. Bonus points are valid only for the first exam term and will only be added to the exam score if a student passes the threshold for the written exam (33 points).

Exam:

Students have to pass the written exam (in form of a test, comprised of 60 questions, each containing 5 statements: 4 false and 1 true) before approaching the oral exam. The threshold for the written exam is 33 points. Students are strongly advised to participate actively during the course since the first exam is held shortly after the course is completed.

Results from the written exam are valid throughout the entire academic year.

1st exam term: February 3, 2026, A116 at 11:20