

COURSE SYLLABUS

RADIOLOGY

Dental Medicine (3DM) · 5th semester · academic year 2026/2027

1. Course information

Course title	Radiology
Department	Department of Radiodiagnostics and Imaging Methods, UPJŠ Faculty of Medicine and L. Pasteur University Hospital, Košice
Study programme	Dental Medicine
Degree	joint 1st and 2nd degree (doctoral study programme)
Form of study	full-time
Type of course	compulsory
Year / semester	3rd year / 5th semester (winter)
Teaching load	1 / 1 hour per week (lecture / practical)
Credits	3
Teaching methods	lecture, practical session in the imaging department
Method of completion	examination (Rogo test)
Language of instruction	English
Prerequisites	none
Course guarantor	MUDr. Piotr Pedowski, PhD., MPH, DrPH
Academic year	2026/2027

2. Teaching staff and teaching bases

Course guarantor	MUDr. Piotr Pedowski, PhD., MPH, DrPH – Head of Department
Lecturers	MUDr. Piotr Pedowski, PhD., MPH, DrPH MUDr. Štefan Pataky, PhD. MUDr. Katarína Kriegerová, PhD. MUDr. Viliam Weis MUDr. Jakub Fedorko
Practical sessions	assistant professors and radiologists of the Department of Radiodiagnostics and Imaging Methods
Teaching bases	Lectures – lecture hall P3, UPJŠ Faculty of Medicine. Practical sessions – the teaching bases of the Department: • Department of Radiodiagnostics and Imaging Methods, UPJŠ FM and L. Pasteur University Hospital, Trieda SNP 1, Košice • Department of Radiology, UPJŠ FM and Faculty Hospital AGEL Košice-Šaca a. s., Lúčna 57, Košice-Šaca • Department of Radiology, UPJŠ FM and Railway Hospital AGEL Košice, Masarykova 9, Košice

3. Organisation of teaching

Lectures are delivered in blocks: six two-hour blocks, in the even week, on Monday 13:15 – 14:45 in lecture hall P3. Practical sessions are likewise delivered in blocks: seven two-hour sessions, in groups assigned by the timetable. They are held at all three teaching bases of the Department – the Department of Radiodiagnostics and Imaging Methods at the L. Pasteur University Hospital, the Department of Radiology at the Faculty Hospital AGEL Košice-Šaca a. s., and the Department of Radiology at the Railway Hospital AGEL Košice; the allocation of groups to the individual sites is set by the timetable at the beginning of the semester. The overall load corresponds to the accredited 1/1 hour per week.

The structure of the course follows the recommendations of the European Society of Radiology – Curriculum for Undergraduate Radiological Education (U-level, 2021), adapted for dental medicine: one full lecture block and four practical sessions are devoted to dentomaxillofacial imaging, alongside the general radiological competences required of every graduate in medicine.

4. Learning outcomes

On successful completion of the course, the student will be able to:

Knowledge – the student can:

- explain the physical principles, capabilities and limitations of the individual imaging modalities (radiography, fluoroscopy, ultrasound, CT, MRI, DSA, hybrid imaging);
- describe the sources and quantities of ionising radiation, typical doses, risks and the principles of radiation protection (justification, optimisation, ALARA), with particular attention to dental radiography and CBCT;
- characterise contrast media, their indications, contraindications and adverse reactions, including their management;
- describe the normal radiological anatomy of the teeth, jaws, head and neck, and the basic patterns of disease in the major organ systems;
- outline the indications and principles of vascular and non-vascular interventional radiology.

Skills – the student is able to:

- select an appropriate imaging modality for a given clinical question and justify it against current referral criteria;
- complete an imaging request correctly and provide the radiologist with the relevant clinical information;
- interpret intraoral, panoramic and CBCT images and recognise caries, periapical and periodontal disease, impacted teeth, cysts and odontogenic lesions;

- recognise the imaging features of odontogenic infection spreading into the deep neck spaces and identify findings requiring urgent referral;
- read a chest radiograph and a radiograph of the skeleton systematically and recognise urgent findings;
- integrate the radiological report into clinical decision-making in dental practice.

Attitudes and competences – the student will:

- apply the principles of radiation protection to patients and staff, and avoid unjustified examinations;
- communicate the risk of an examination to the patient clearly and truthfully;
- cooperate with the radiologist as a member of a multidisciplinary team.

5. Lecture schedule

Monday, even week, 13:15 – 14:45, lecture hall P3

Block	Date	Topic	Lecturer
1	28 September 2026	Introduction to Radiology: Imaging Modalities and Radiation Protection	MUDr. Piotr Pedowski, PhD., MPH, DrPH
2	12 October 2026	Neuroradiology, Neuroendovascular and Vascular Radiology	MUDr. Štefan Pataky, PhD.
3	26 October 2026	Head and Neck Radiology: Dentomaxillofacial Imaging	MUDr. Piotr Pedowski, PhD., MPH, DrPH
4	9 November 2026	Thoracic and Cardiovascular Radiology	MUDr. Katarína Kriegerová, PhD.
5	23 November 2026	Abdominal and Urogenital Radiology	MUDr. Viliam Weis
6	7 December 2026	Musculoskeletal and Emergency Radiology	MUDr. Jakub Fedorko

6. Lecture content

Lecture 1 · 28 September 2026

Introduction to Radiology: Imaging Modalities and Radiation Protection

MUDr. Piotr Pedowski, PhD., MPH, DrPH

- Imaging modalities – radiography, fluoroscopy, ultrasound, CT, MRI, DSA; hybrid imaging (PET/CT, PET/MRI).
- Radiation protection – doses and risks, the ALARA principle, justification and optimisation, communicating risk to the patient.
- Contrast media – iodinated, gadolinium-based and ultrasound agents; indications, risks, contraindications, management of reactions.
- Imaging appropriateness and referral criteria; pre- and post-test probability.
- Digital radiology, PACS/RIS, structured reporting, artificial intelligence in imaging.

Lecture 2 · 12 October 2026

Neuroradiology, Neuroendovascular and Vascular Radiology

MUDr. Štefan Pataky, PhD.

- CT and MRI of the brain and spine – normal anatomy and basic patterns of disease.
- Acute ischaemic stroke – non-contrast CT, ASPECTS, CT angiography, CT perfusion; indications for thrombolysis and mechanical thrombectomy.
- Intracranial and subarachnoid haemorrhage, cerebral aneurysms, head injury.
- CNS tumours, demyelinating and neurodegenerative disease.
- The aorta, peripheral arteries, extracranial carotids, venous thrombosis, pulmonary embolism (CT angiography).
- Neuroendovascular radiology – mechanical thrombectomy in acute stroke, coiling and stent-assisted coiling of aneurysms, flow diverters, embolisation of AVMs and dural fistulas, carotid and intracranial stenting.
- Vascular interventional radiology – Seldinger technique, diagnostic angiography, angioplasty and stenting, embolisation, endovascular repair of aortic aneurysm.

Lecture 3 · 26 October 2026

Head and Neck Radiology: Dentomaxillofacial Imaging

MUDr. Piotr Pedowski, PhD., MPH, DrPH

- Intraoral radiographs, panoramic radiography (OPG) and cone-beam CT (CBCT) – technique, indications, image quality.

- Radiation protection in dental imaging – justification, optimisation and dose reduction in CBCT.
- Teeth and jaws – caries, periapical and periodontal disease, impacted teeth, cysts and odontogenic tumours.
- Odontogenic infection and its spread into the deep neck spaces; imaging of the emergency dental patient.
- Temporomandibular joint, maxillofacial trauma, paranasal sinuses.
- Salivary glands – ultrasound, sialography, MRI. Cervical lymph nodes and the thyroid on ultrasound.
- Staging of oral and oropharyngeal carcinoma – CT, MRI, PET/CT; medication-related osteonecrosis and osteoradionecrosis of the jaw.

Lecture 4 · 9 November 2026

Thoracic and Cardiovascular Radiology

MUDr. Katarína Kriegerová, PhD.

- Systematic reading of the chest radiograph; basic radiological patterns.
- HRCT and interstitial lung disease; imaging of infection and COPD.
- The pulmonary nodule and its management; low-dose CT and lung cancer screening.
- Cardiac imaging – CT coronary angiography, calcium score, cardiac MRI.

Lecture 5 · 23 November 2026

Abdominal and Urogenital Radiology

MUDr. Viliam Weis

- Ultrasound as the first-line modality; CT protocols and contrast phases.
- The acute abdomen – obstruction, perforation, appendicitis, pancreatitis, mesenteric ischaemia.
- MRI of the liver and pancreas, MR cholangiopancreatography.
- Urogenital tract – urolithiasis (low-dose CT), MRI of the prostate, renal imaging.
- Oncological imaging and staging; non-vascular interventional radiology – biopsy, drainage, ablation.

Lecture 6 · 7 December 2026

Musculoskeletal and Emergency Radiology

MUDr. Jakub Fedorko

- Systematic assessment of the skeleton; fractures, their classification, healing and complications.
- Soft tissue injury – ultrasound and MRI of joints, muscles and tendons.
- Polytrauma – whole-body CT protocol, FAST and e-FAST, the emergency imaging algorithm.
- Inflammatory, degenerative, metabolic and neoplastic bone disease.

7. Schedule of practical sessions

Seven two-hour sessions; the topics follow on from the lecture blocks. Sessions are held at the teaching bases of the Department (L. Pasteur University Hospital, Faculty Hospital AGEL Košice-Šaca, Railway Hospital AGEL Košice) according to the timetable.

No.	Topic of the practical session
1.	The imaging department, PACS/RIS and the imaging request; referral criteria and communication with the radiologist. Radiation protection in practice – typical doses, the ALARA principle, imaging in pregnancy and in children. Contrast media – preparation, contraindications, management of an adverse reaction.
2.	Intraoral radiographs and panoramic radiography – technique, positioning, common artefacts and errors, image quality assessment; radiation protection and dose optimisation in dental imaging.
3.	Cone-beam CT – acquisition, reconstruction and reading the volume in three planes; justification, indications and dose optimisation in dental CBCT.
4.	Teeth and jaws – caries, periapical and periodontal disease, impacted teeth, odontogenic cysts and tumours on intraoral radiographs, OPG and CBCT.
5.	Odontogenic infection and the deep neck spaces; temporomandibular joint; maxillofacial trauma and the paranasal sinuses. Salivary glands and neck ultrasound – cervical lymph nodes, thyroid; principles of staging oral and oropharyngeal carcinoma.
6.	Neuroradiology and vascular imaging – non-contrast brain CT, patterns of stroke and haemorrhage, the angiography suite. Systematic reading of the chest radiograph – image quality, basic patterns, urgent findings.
7.	Abdominal ultrasound and CT – first principles, contrast phases, the acute abdomen. The skeleton – fractures and their classification; emergency imaging and FAST. Final seminar – imaging algorithms, case-based review, preparation for the examination.

8. Course requirements and assessment

- Attendance at lectures is obligatory.
- Attendance at practical sessions is obligatory; up to two excused absences per semester are permitted. Any further absence must be made up by arrangement with the teacher.
- The course is completed by an examination in the form of a written test (Rogo test); a minimum of 60 % is required to pass.
- The final mark is awarded according to the grading scale below.

Grading scale

Grade	Score
A – excellent	100 – 91 %
B – very good	90 – 84 %
C – good	83 – 75 %
D – satisfactory	74 – 68 %
E – sufficient	67 – 60 %
FX – fail	59 % and less

9. Literature

Required reading

1. DRAGE, N., HAWORTH, S. J.: *Whaites' Essentials of Dental Radiography and Radiology*. 7th ed. Elsevier, 2026.
2. MALLYA, S. M., LAM, E. W. N.: *White and Pharoah's Oral Radiology: Principles and Interpretation*. 8th ed. Elsevier, 2019.
3. MICHAELY, H. J., CHEN, T. L., POPE, D. J., OTT, I.: *Basic Radiology*. 2nd ed. Lange / McGraw-Hill.

Recommended reading

1. ADAM, A., DIXON, A. K., GILLARD, J. H., SCHAEFER-PROKOP, C. (eds.): *Grainger & Allison's Diagnostic Radiology*. 7th ed. Elsevier, 2021.
2. DE LACEY, G., MORLEY, S., BERMAN, L.: *The Chest X-Ray: A Survival Guide*. Elsevier.
3. HOFER, M.: *CT Teaching Manual*. 5th ed. Thieme.
4. European Society of Radiology: *Curriculum for Undergraduate Radiological Education (U-level Curriculum)*. Vienna: ESR, 2021. Available at www.myesr.org.
5. European Commission: *Radiation Protection No. 172 – Cone Beam CT for Dental and Maxillofacial Radiology: Evidence-Based Guidelines (SEDENTEXCT)*.
6. ESR iGuide / ACR Appropriateness Criteria – electronic imaging referral guidelines.

Košice, September 2026

MUDr. Piotr Pedowski, PhD., MPH, DrPH
course guarantor, Head of Department