

University: <i>University of Presov</i>	
Faculty/university workplace: <i>Faculty of Health Care</i>	
Code: <i>6/RAT/RAPT1-ER/25</i>	Course title: <i>Radiological instrumentation I</i>
Type, scope and method of educational activity: Type of educational activity: <i>Lecture, Practical seminar</i> Scope of educational activity: <i>2,3 hour per week, 26,39 per semester</i> Method of educational activity: <i>Attendance</i>	
Number of credits: 5	
Recommended semester:	
<i>1st year ST</i>	<i>radiological technology (RT)</i>
Study grade: <i>Bachelor</i>	
Prerequisites: <i>6/RAT/RAFYZ/22 - Radiological physics and biophysics</i>	
Conditions for passing the course: Form of assessment: Final evaluation: <i>Assessment and completion of the course: Exam</i> <i>Assessment and completion of the course: Continuous assessment "PH".</i> <i>Full-time study contact lessons 65 hours / semester, 2 hours (lecture / week), 3 hours (seminars / week), non-contact teaching 85 hours / semester, total student workload 150 hours, full-time teaching.</i> <i>During the semester, the student performs a written examination of selected topics - max. 100 points (student preparation - 34 h). Student success must be at least 50%.</i> <i>A (100 - 90%)</i> <i>B (89.99 - 80%)</i> <i>C (79.99 - 70%)</i> <i>D (69.99-60%)</i> <i>E (59.99 - 50%)</i> <i>FX (49.99 and less%).</i> <i>The final evaluation is calculated as the sum of points obtained in 2 written tests. Credits will not be awarded if a student scores less than 50 points.</i> <i>A (100 - 90%)</i> <i>B (89.99 - 80%)</i> <i>C (79.99 - 70%)</i> <i>D (69.99-60%)</i> <i>E (59.99 - 50%)</i> <i>FX (49.99 and less%).</i> <i>The rules of student load assessment are available at: https://www.unipo.sk/fakulta-zdravotnictva/pokyny/</i> Final rating: <i>The evaluation will be given on the basis of meeting all the above requirements according to the classification scale A, B, C, D, E, FX - Study Regulations PU in Prešov https://www.unipo.sk/fakulta-zdravotnictva/vzdelavanie1/</i>	
Learning outcomes: Learning outcomes: <i>After completing the course, students can:</i> Knowledge: <i>After getting acquainted with the basic information, the student has an adequate level of understanding and skills at a declarative level for:</i> <i>VV1. Characterization of the basic functions of radiological devices, the method of their operation and regular inspection,</i> <i>VV2. Fault description, inspection and planning of new equipment,</i> <i>VV3. Defining preparation for work with radiological equipment.</i> Skills: <i>The student has the ability to apply knowledge especially in the field of cognitive and practical:</i> <i>VV4. Apply in practice knowledge of the basic functions of radiological devices, the method of their operation and</i>	

regular inspection,
 VV5. Apply in practice the knowledge of fault description in such a way that it is possible to make unambiguous orders for repairs, inspections and planning of new equipment,
 VV6. Apply in practice knowledge of preparation for work with radiological equipment.
Competences:
 The student has the ability to apply knowledge for professional and personal development, especially in the form of:
 VV7. Demonstration of the ability to take responsibility for the application of knowledge of the basic functions of radiological devices, the method of their operation and regular inspection,
 VV8. Demonstration of independence in the application of knowledge of fault description so that it is possible to make unambiguous orders for repairs, inspections and planning of new equipment,
 VV9. Demonstration of independence in the application of knowledge in preparation for work with radiological equipment.

Course content:

Lectures : seminars:

1. The principle of X-ray tubes , type , glow circuits , levies rotation.
2. High-voltage circuits , types of generators.
3. Block diagram of a conventional X-ray device block functions . Timing diagram for electric values during exposure .
4. The primary lens (Lysholm) , secondary lens (Bucky) - technical solution.
5. X-ray image intensifier and the possibility of recording (spot, video , cinema camera).
6. Automatic Exposure .
7. The TV chain.
8. radiographic , fluoroscopic complete C- arm , mobile devices , dental devices (intraoral , panoramic) , mammography.
9. hard and soft imaging technique .
10. Ultrasonography .
11. Digital subtraction .
12. Digital radiography .
13. Computer tomography .
14. Magnetic resonance imaging .
15. processing and storage in Radiology - PACS .
16. Seminar analysis and practical demonstration of typical systems.
17. Consultations .

Recommended literature :

- REŽNÁK I.: HUŠÁK, V., KAŠUBA J., MIŠTINA L.: Moderné zobrazovacie metódy v lekárskej diagnostike, Martin: Osveta 1992.
2. CHUDÁČEK, V.: Rádiodiagnostika, Martin: Osveta 1993.
 3. KOVÁČ, A.: Abdominálna sonografia, Martin: Osveta 1995.
 4. ELIÁŠ, P., ŽIŽKA J.: Dopplerovská ultrasonografie.
 5. WEIS, J., BOŘUTA, P.: Úvod do magnetickej rezonancie. GOEN Bratislava, 1998.
 6. Časopisy: Praktická rádiologie, Česká rádiologie, Radiology, Diagnostic Imaging Europe.

Notes:

Attendance at lectures - min. 80%, participation in exercises 90%.

For students with special needs, an individual approach is provided based on the recommendation of the faculty coordinator for students with special needs.

Course evaluation:

Total number of students evaluated: 239

A	B	C	D	E	FX
38%	22%	14%	5%	3%	18%

Lecturers:

prof. MUDr. Marie Černá, Ph.D., guarantor

Bc. Vladimír Remeta, co-guarantor, lecturer, examiner, instructor, seminary supervisor

Bc. Katarína Tokarčíková, co-guarantor, lecturer, examiner, instructor, seminary supervisor

PhDr.Bc. Janka Slaninková, Ph.D., co-guarantor, lecturer, examiner, instructor, seminary supervisor

doc. RNDr. Marek Chmelík, Ph.D., co-guarantor, lecturer, examiner, instructor, seminary supervisor

Date of last change: 01.09.2024

Approved by: prof. MUDr. Marie Černá, Ph.D.