

University: <i>University of Presov</i>	
Faculty/university workplace: <i>Faculty of Health Care</i>	
Code: <i>6/RAT/RABIO-ER/25</i>	Course title: <i>Radiobiology</i>
Type, scope and method of educational activity: Type of educational activity: <i>Lecture</i> Scope of educational activity: <i>4 hour per week, 52 per semester</i> Method of educational activity: <i>Attendance</i>	
Number of credits: <i>4</i>	
Recommended semester:	
<i>1st year WT</i>	<i>radiological technology (RT)</i>
Study grade: <i>Bachelor</i>	
Conditions for passing the course: Form of assessment: Continuous evaluation: <i>Conditions for passing the course:</i> <i>Assessment and completion of the course: Exam</i> <i>Full-time form of study: contact teaching 52 hours / semester, 4 hours (lecture) / week, non-contact teaching 98 hours / semester, total student workload 150 hours, full-time teaching</i> Final evaluation: <i>lectures:</i> <i>The student takes a final written test with assessment. Success of students must be at least 60%.</i> <i>A (100,00 – 93,00 %)</i> <i>B (92,00 – 85,00 %)</i> <i>C (85– 78 %)</i> <i>D (78 – 70 %)</i> <i>E (69 – 60 %)</i> <i>FX (59,99 or less %)</i> <i>The rules of student load assessment are available at: https://www.unipo.sk/fakulta-zdravotnictva/pokyny/</i> <i>Final rating:</i> <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: <i>Learning outcomes:</i> <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 essence of biology of healthy and tumor cells.</i> <i>VV2. Characterization of influencing cell biology by ionizing radiation.</i> <i>VV3. Explaining the possibility of assessing the early and late consequences of irradiation.</i> <i>VV4. Characterizing the biology of healthy and tumor cells and influencing their biology by ionizing radiation.</i> <i>VV5. Explaining the biological effects of ionizing radiation and the risks of non-ionizing radiation.</i> <i>VV6. Defining the principles of health protection in the handling of sources of ionizing radiation and adheres to them in practice.</i> <i>VV7. Characterizing the necessary range of expertise in order to reduce the radiation exposure from medical exposure.</i> Skills: <i>The student has the ability to apply knowledge especially in the field of cognitive and practical:</i> <i>VV8. Apply knowledge of the essence of healthy and cancer cell biology.</i> <i>VV9. Apply knowledge about the influence of cell biology by ionizing radiation.</i> <i>VV10. Apply knowledge of the possibilities of assessing the early and late consequences of irradiation.</i> <i>VV11. Apply knowledge of the biological effects of ionizing radiation and the risks of non-ionizing radiation.</i> <i>VV12. Apply knowledge of the principles of health protection in the handling of sources of ionizing radiation and</i>	

adheres to them in practice.

VV13. Apply knowledge of the principles of optimizing working conditions in workplaces with sources of ionizing radiation in accordance with international recommendations and standards.

VV14. Apply professional knowledge in order to reduce the radiation exposure from medical exposure.

VV15. Apply professional knowledge in order to reduce the radiation exposure from medical exposure.

Competences:

The student has the ability to apply knowledge for professional and personal development, especially in the form of:

VV16. Demonstration of the ability to take responsibility in the application of knowledge of the essence of healthy and tumor cell biology.

VV17. Demonstration of independence in the application of knowledge about the influence of cell biology by ionizing radiation.

VV18. Demonstration of the ability to think critically when assessing the timely and late consequences of exposure.

VV19. Demonstration of independence in the application of knowledge about the biological effects of ionizing radiation and the risks of non-ionizing radiation.

VV20. Demonstration of independence in the application of knowledge of the principles of health protection in the handling of sources of ionizing radiation and adheres to them in practice.

VV21. Demonstration of the ability to use knowledge of the principles of optimizing working conditions in workplaces with sources of ionizing radiation in accordance with international recommendations and standards.

VV22. Demonstration of the ability to use expertise to reduce the radiation exposure from medical exposure.

Course content:

Lectures:

- elemental composition of living matter , structure and life cycle of cells
- cell proliferation in normal tissues
- characteristics of cancer cells
- cell proliferation in tumors , tumor growth , clonogenic cells
- interaction of various types of ionizing radiation with matter
- radiobiology of normal cells and tumor cells
- biological effects of ionizing radiation in different tissues
- clinical picture of damage to healthy tissue
- effects of ionizing radiation on the human fetus
- carcinogenic effects of ionizing radiation

Recommended literature :

Lepej J., Lacko A. Nukleárna medicína 1. Všeobecná časť. EQUILIBRIA Košice. 2018. ISBN 978-80-8143-222-4

Heřman M. et al. Basics of radiology. Univerzita Palackého v Olomouci. 2021. ISBN 978-80-2445-697-3

Havránková, R.. Klinická radiobiologie. Grada. 2020. ISBN 978-80-2474-098-0

Kuna et al. Klinická radiobiologie. MANUS. 2005. ISBN 80-86571-09-2

Feltl a Cvek. Klinická radiobiologie. TOBIÁŠ. 2008. ISBN 978-80-7311-103-8

Notes:

Attendance at lectures - min. 80%.

An individualized approach is provided for students with special needs based on the recommendation of the faculty coordinator for students with special needs.

A (100,00 – 90,00 %)

Course evaluation:

Total number of students evaluated: 227

A	B	C	D	E	FX
26%	19%	18%	15%	11%	12%

Lecturers:

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

RNDr. Soňa Kalafutová, PhD., co-guarantor, lecturer, examiner, instructor, seminary supervisor

Date of last change: 01.09.2024

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