| Study program | Level of studies | | **Third cycle** | |
|---|---|---|---|---|
| | Title of the study program | | **Doctoral studies in physics** | |
| Course title | **ADVANCED RADIOLOGICAL IMAGING** | | | |
| Course ID | Semester | Course status | ECTS credits | Teaching hours |
| **PAP7011** | **I /II** | **Elective** | **10** | **30** |
| Course aims and expected learning outcomes | Aim: To acquire theoretical and practical knowledge of imaging methods in diagnostic radiology and nuclear medicine.<br><br>Outcome: To master and understand modern methods and imaging techniques in medicine. | | | |

COURSE CONTENT

1. DETECTORS IN RADIOLOGY: Detectors in radiography, fluoroscopy, computed tomography, ultrasonography, magnetic resonance, scintillation cameras, single-photon emission tomography, positron emission tomography, and more.
2. IMAGING METHODS IN RADIOLOGY: Classical imaging methods, Tomosynthesis in mammography and radiography, multi-energy computed tomography, magnetic resonance spectroscopy, Image quality evaluation, Phantoms.
3. IMAGING METHODS IN NUCLEAR MEDICINE: Single-photon emission tomography, Positron emission tomography, Hybrid systems, Image quality evaluation, Phantoms.
4. COMPUTATIONAL METHODS: Image reconstruction methods, Artificial intelligence, Design and production of phantoms.

| LITERATURE | ASSESSMENT OF LEARNING | |
|---|---|---|
| Suetens P. Fundamentals of medical imaging. Cambridge university press; 2017 May 11.<br><br>Iniewski K. Advanced X-ray Detector Technologies. Springer International Publishing; 2022.<br><br>Ranschaert ER, Morozov S, Algra PR, editors. Artificial intelligence in medical imaging: opportunities, applications and risks. Springer; 2019 Jan 29. | Assessment Method | Points |
| | Seminar paper | 45 |
| | Final exam | 55 |
| | | |
| | | |
| | Total | 100 |

Remarks