



Subject card

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|---|---|--|--|-------------------------------------|--|------------|-----|
| Subject name and code | , PG_00047947 | | | | | | |
| Field of study | Biomedical Engineering, Biomedical Engineering, Biomedical Engineering | | | | | | |
| Date of commencement of studies | October 2024 | | Academic year of realisation of subject | | 2026/2027 | | |
| Education level | first-cycle studies | | Subject group | | Optional subject group Subject group related to scientific research in the field of study | | |
| Mode of study | Full-time studies | | Mode of delivery | | at the university | | |
| Year of study | 3 | | Language of instruction | | Polish | | |
| Semester of study | 6 | | ECTS credits | | 4.0 | | |
| Learning profile | general academic profile | | Assessment form | | assessment | | |
| Conducting unit | Department of Chemistry and Technology of Functional Materials -> Faculty of Chemistry | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | | | | | |
| | Teachers | | | | | | |
| Lesson types and methods of instruction | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 30.0 | 0.0 | 15.0 | 0.0 | 0.0 | 45 |
| | E-learning hours included: 0.0 | | | | | | |
| Learning activity and number of study hours | Learning activity | Participation in didactic classes included in study plan | | Participation in consultation hours | | Self-study | SUM |
| | Number of study hours | 45 | | 4.0 | | 51.0 | 100 |
| Subject objectives | The aim of the course is to familiarize students with chosen issues related to forensic chemistry and toxicology. The lecture content and laboratory program have been selected in a way to show not only the specificity of this area of science, but also to clearly emphasize the interdisciplinary character of the subject, which is characteristic for modern science. | | | | | | |
| Learning outcomes | Course outcome | | Subject outcome | | Method of verification | | |
| | [K6_W52] Knows and understands, to an advanced extent, selected aspects of chemistry and biochemistry, constituting general knowledge related to the field of study | | Student knows and understands the principles of the functioning of the human body and is able to assess the influence of external factors on its functioning | | [SW1] Assessment of factual knowledge | | |
| | [K6_U53] can apply equipment used in biomedical diagnostics | | Student knows and distinguishes the principles of operation of the equipment used in biomedical diagnostics, with particular emphasis on the equipment used in toxicological and forensic analysis | | [SU3] Assessment of ability to use knowledge gained from the subject | | |
| | [K6_U51] can conduct laboratory work connected with chemistry and biochemistry, specific to biomedical engineering | | Student knows and uses laboratory techniques used in the field of toxicological and forensic analysis. Student is able to interpret the results of experimental work | | [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools | | |
| Subject contents | The content of the course covers issues related to forensic toxicology discussed on examples, including, inter alia, specifics of sampling and preparation of samples and analysis of selected groups of substances (alcohols and other addictive substances, poisoning with narcotic substances, pesticides, drugs, etc.). Issues related to the validation of analytical methods are also discussed. Selected aspects of the orchard analysis are discussed on selected examples of groups of substances / materials, taking into account the methods and apparatus used, e.g. medium and near infrared spectroscopy, terahertz spectroscopy, chromatographic methods, chromatographic methods coupled with spectroscopic methods, including mass spectrometry. | | | | | | |
| Prerequisites and co-requisites | Required knowledge of the issues discussed in the course of classes in: - chemistry - organic and bioorganic chemistry - analytical chemistry - biochemistry. Required practical skills from the above areas according to the laboratory schedule. | | | | | | |

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| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| | Laboratory:all practical exercises, passing the required tests | 100.0% | 40.0% |
| | Lecture: a colloquium covering the scope material discussed on lecture | 50.0% | 60.0% |
| Recommended reading | Basic literature | 1. Clarke's analytical forensic toxicology / ed. by Sue Jickells, Adam Negrusz ; consulting eds. Anthony C. Moffat, M. David Osselton, Brian Widdop. London ; Chicago : Pharmaceutical Press, cop. 2008. 2. Seńczuk W. Toksykologia współczesna. PZWL 3. Konieczka P., Namieśnik J.: Ocena i kontrola jakości wyników pomiarów analitycznych, 2007. | |
| | Supplementary literature | 1. Flanagan R.J., Taylor A., Watson I.D., Whelpton R. Fundamentals of Analytical Toxicology. Wiley, 2007. 2. Moffat A.C., Osselton M.D., Widdop B. Clarke's Analysis of Drugs and Poisons. Pharmaceutical Press, 2004-2010. 3. Food and Drug Administration, Guidance for Industry, Analytical Procedures and Methods Validation: Chemistry, Manufacturing and Controls Documentation, 2000. 4. Food and Drug Administration, Guidance for Industry, Bioanalytical Method Validation, 2001, 5. Kiemle David J., Silverstein Robert M., Webster Francis X. Spektroskopowe metody identyfikacji związków organicznych, 2012. | |
| | eResources addresses | Adresy na platformie eNauczanie: | |
| | Example issues/ example questions/ tasks being completed | 1. Forensic expertises - scope and specificity 2. Forensic biological traces and their importance as evidence 3. Methods of detecting explosives 4. Modern methods of detecting document forgeries and confirming their authenticity. | |
| Work placement | Not applicable | | |

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