

Subject card

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|--|---|---|-------------------------------------|------------|---|-------------------|-----|
| Subject name and code | Xenobiotics, PG_00099393 | | | | | | |
| Field of study | Marine Biotechnology | | | | | | |
| Date of commencement of studies | October 2024 | Academic year of realisation of subject | | | | 2025/2026 | |
| Education level | Master's studies | Subject group | | | | | |
| Mode of study | full-time studies | Mode of delivery | | | | at the university | |
| Year of study | 2 | Language of instruction | | | | English | |
| Semester of study | 4 | ECTS credits | | | | 1.0 | |
| Learning profile | academic | Assessment form | | | | credit | |
| Conducting unit | UG Institute of Biotechnology -> Intercollegiate Faculty of Biotechnology UG-MUG -> Rector | | | | | | |
| Name and surname of lecturer (lecturers) | Subject supervisor | | dr Grzegorz Gołuński | | | | |
| | Teachers | | dr Grzegorz Gołuński | | | | |
| Lesson types | Lesson type | Lecture | Tutorial | Laboratory | Project | Seminar | SUM |
| | Number of study hours | 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 15 |
| | E-learning hours included: 0.0 | | | | | | |
| | eNauczanie source addresses: Moodle ID: 13636 Xenobiotics - Marine Biotechnology 2026 https://mdl.ug.edu.pl/course/view.php?id=13636 | | | | | | |
| 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 | 15 | 2.0 | 10.0 | 27 | | |
| Subject objectives | The course introduces several groups of the chemical compounds present in various forms in the environment. During the classes chemical structure, origin, metabolism and possible, positive as well as negative effects of xenobiotics are to be discussed. Short panel describing basic methods for xenobiotics detection and analysis is also included. Preparation and presentation of the short talk on the chosen subject will also promote searching and critical analysis of source materials and practice scientific discussion. | | | | | | |
| Learning outcomes | Course outcome | Subject outcome | | | Method of verification | | |
| | [MBMU2-KK01] Is ready to critically evaluate his knowledge and continuously improve, update and upgrade his skills in the field of marine biotechnology | The student is able to prepare a presentation on a selected topic based on an independent and critical analysis of retrieved sources. | | | [SK2] presentation/project/paper/report | | |
| | [MBMU2-KW04] Knows and deeply understands advanced research methods used in marine biotechnology and related sciences | The student knows and understands the basic methods of detection and analysis of xenobiotics in a variety of biological material | | | [SW2] presentation/project/paper/report | | |
| | [MBMU2-KW03] Knows and understands complex biological phenomena at the molecular level, understands their significance for an organism, marine environment and marine biotechnology | The student knows the chemical structure, origin, metabolism and possible positive and negative effects of xenobiotics, as well as basic methods of detection and analysis of xenobiotics | | | [SW2] presentation/project/paper/report | | |

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| Subject contents | 1. Mutagens and mutagenesis compounds directly or indirectly interacting with/on DNA (reactive oxygen species generators, alkylating agents, benzene, furanocoumarins, aromatic amines, proflavine). Use of mutagens in biotechnology. 2. Toxins and poisons where and how do we use them? potential threats. Biocides, aflatoxin, botulinum toxin, heavy metals, polycyclic aromatic hydrocarbons, chosen biological and chemical weapons. 3. Antimutagens Potential uses of methylxanthines, flavonoids and other antioxidants in protection from mutagens. 4. Medicines origin, use, metabolism and side effects of chosen medicines (Nonsteroidal anti-inflammatory drugs, classic anticancer drugs, corticosteroids, beta blockers, inhibitors of cellular receptors, benzodiazepines). 5. Psychoactive substances and drugs of abuse mechanism of action, influence on organism, use in medicine (amphetamine, cannabinoids, chosen opiates, LSD, alcohol, nicotine, designer drugs). 6. Performance enhancing drugs (doping) bane of professional sports anabolic steroids, hormones, stimulants. 7. Physicochemical methods for detection of discussed substances. 8. Biological methods for analysis of discussed substances. | | |
| Prerequisites and co-requisites | Basic knowledge in biochemistry and molecular biology | | |
| Assessment methods and criteria | Subject passing criteria | Passing threshold | Percentage of the final grade |
| Recommended reading | Basic literature | Curtis D. Klaassen, Casarett & Doulls Toxicology. The Basic Science of Poisons. 7th ed. 2008, McGraw-Hill Medical Publishing Division Frank A. Barile, Clinical Toxicology. Principles and Mechanisms. 2nd ed. 2010 Informa Healthcare Pavel Anzenbacher, Ulrich M. Zanger, Metabolism of Drugs and Other Xenobiotics, 2012 Wiley-Vch Materials provided by the lecturer during course | |
| | Supplementary literature | VV Pilay, Modern Medical Toxicology, 4th ed. 2013, Jaypee Brothers Medical Publishers John A. Timbrell, Principles of Biochemical Toxicology, 4th ed. 2009, Informa Healthcare Ashraf Mozayani, Lionel Raymon, Handbook of Drug Interactions, 2nd ed., 2012, Humana Press | |
| | eResources addresses | | |
| Example issues/ example questions/ tasks being completed | | | |
| Work placement | Not applicable | | |

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