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| Course title | Molecular Biology | | |
| Course code | Semester | ECTS | Lectures/ classes |
| 13.1.1448 | winter | 3 | Lectures: 15 hours+ Lab class: 15 hours |
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| Name of the lecturer and contact | prof. dr hab. Grzegorz Węgrzyn; dr Bożena Nejman-Faleńczyk, profesor uczelni; dr Karolina Pierzynowska; grzegorz.wegrzyn@ug.edu.pl | | |
| Prerequisites | Basic knowledge in chemistry, using simple laboratory equipment, preparation of buffers and solutions | | |
| Course description | <p>Lectures: Structures of DNA and RNA. Organization and replication of genetic material in prokaryotic and eukaryotic cells, including chromosomes, plasmids and viral nucleic acids. Gene structure. Stages of gene expression. Regulation of gene expression at various levels, including transcription, post-transcriptional modification, translation, and post-translational modification. Genetic recombination systems. DNA damage, repair and mutagenesis. Principles of genetic engineering.</p> <p>Practical classes: Basic methods of DNA analysis, including DNA isolation, gel electrophoresis, restriction analysis, PCR-mediated amplification. Analysis of gene expression with the use of gene fusions, estimation of protein levels, and phenotypic expression of genetic information.</p> | | |
| Learning outcomes | <p>Knowledge:</p> <ul style="list-style-type: none"> - describes the structure and properties of basic types of biological macromolecules, molecular mechanisms of the basic metabolism pathways and the flow of genetic information, and sources of variability of organisms; - defines the most important laws and rules of physics and chemistry underlying biological processes and describes properties of chemical elements and compounds; <p>Skills:</p> <ul style="list-style-type: none"> - uses basic research equipment and tools, as well as maintains correct order of activities in the laboratory - conducts observations and performs basic physical, biological and chemical measurements in the field or laboratory | | |