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| Module name | **Molecular biology an extensive course** |
| Module code | B-BT.004 |
| ISCED code | 0511: Biology |
| Study cycle | I° |
| Semester | Winter semester |
| Responsible for this module | prof. Marek Tchórzewski (maro@hektor.umcs.lublin.pl),  Tel. +48 815375956 |
| Language of instruction | English |
| Website | - |
| Prerequisites | completed course in biochemistry |
| ECTS | 11 |
| ECTS points hour equivalents | Contact hours (work with an academic teacher) 45 hrs of lectures and 75 hrs of laboratory  Total number of hours with an academic teacher 135 hrs  Number of ECTS points with an academic teacher 5.4   Non-contact hours (students' own work) 140  Total number of non-contact hours 140  Number of ECTS points for non-contact hours 5.6  **Total number of ECTS points for the module 11** |
| Educational outcomes verification methods | written exam, continuous assessment of labs |
| Description | The module covers the knowledge in the area of  the essential concepts of molecular biology.  The student learns the techniques used to analyse DNA, RNA and proteins |
| Reading list | 1. J.E. Krebs, E.S. Goldstein, S.T. Kilpatrick, Lewin’s Genes XI 2. L. A. Allison, Fundamental molecular biology 3. T.A. Brown, Genomes 3 |
| Educational outcomes | **KNOWLEDGE**  The student is able to describe the structure and function of structural proteins and enzymes  The student can describe the impact of changes in the genetic material at the rate of evolution  **SKILLS**  The student can perform the isolation the intracellular structures of the cell  The student can perform: the analysis of chromatin composition in mammalian cells, electrophoresis of DNA and proteins and PCR reaction  **ATTITUDES**  The student reads the literature concerning classical biotechnology and biotechnology at the molecular level |
| Practice | not concerns |

**Information about classes in the cycle**

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| Website | - |
| Educational outcomes verification methods | as described above |
| Comments | The classes are carried out in room 19A |
| Reading list | as described above |
| Educational outcomes | **KNOWLEDGE** as described above  **SKILLS** as described above  **ATTITUDES** as described above |
| A list of topics | Lectures:  the beginnings of molecular biology, the structure and role of DNA, RNA and proteins, transcription in Eukaryotes, RNA processing and posttranscriptional gene regulation, the mechanism of translation, signal transduction, apoptosis, molecular biology of cance  Classes  Isolation of genome DNA and RNA from yeast cells, PCR, DNA and RNA agarose electrophoresis,analysis of chromatin composition in mammalian cells, detection of serine proteases inhibitors, protein electrophoresis in polyacrylamide gels, methods of protein staining after SDS/PAGE, transfection of mammalian cells, protein localization in cell by confocal microscopy |
| Teaching methods | lecture; laboratory experiments; discussion |
| Assessment methods | written exam, continuous assessment of labs |