Module name	**Molecular Biology with elements of molecular diagnostics**
Module code	**B-BM.BA.064Eng**
ISCED code	0511: Biology
Study cycle	*I°*
Semester	summer
Responsible for this module	Kamil Deryło/ Przemysław Grela Department of molecular biology email: kamil@hektor.umcs.lublin.pl przemek@hektor.umcs.lublin.pl
Language of instruction	English
Website	-
Prerequisites	Completed course of Biochemistry
ECTS	5
ECTS points hour equivalents	Contact hours (work with an academic teacher) – 60 - lectures: 30 - labs: 30 Non-contact hours (students' own work) – 65 - preparation for the exam: 20 - preparation for labs: 25 - literature study: 20 **Total number of ECTS points for the module - 5**
Learning outcomes verification methods	lecture - written exam laboratory classes - current preparation for classes and activity,final test
Course full description	During molecular biology with elements of molecular diagnostics lectures, students will become familiar with fundamental concepts of the molecular biology of eukaryotic cells. Special emphasis will be put on gene expression. The following concepts will be explained: structure and function of macromolecules such as DNA, RNA, and proteins; transcription and processing of RNA, translation and post-translational modifications of proteins, gene expression regulation, signal transduction pathways; molecular basis of selected diseases. Molecular biology techniques used in medical research and diagnostics will also be discussed. During laboratory classes, students will become familiar with fundamental methods of molecular biology used in basic research and medical diagnostics such as isolation of nucleic acids, PCR, agarose and polyacrylamide gel electrophoresis, western blotting.
Bibliography	Allison L.A. -Fundamental Molecular Biology, 2nd edition (2011); Alberts B.at al. -Molecular biology of the cell, 6th edition (2015); Brown T.A. -Genomes, 4thedition (2017); PatrinosG., AnsorgeW., DanielsonP.B. (eds) -Molecular diagnostics (2016).
Learning outcomes	Knowledge W1. The graduate knows and understands mechanisms and regulation of gene expression and function of factors involved in this process W2. The graduate knows and understands the possibilities of practical use of the knowledge about mechanisms of gene

	expression in medicine W3. The graduate knows and understands fundamental laboratory techniques used in nucleic acids and proteins research Skills U1. The graduate can isolate DNA from biological material and amplifies it U2. The graduate can analyse proteins using electrophoresis and identify them using immunological methods, in laboratory conditions U3. The graduate can perform plate tests showing the effect of translation inhibitors of microorganisms U4. The graduate can draw appropriate conclusions from conducted experiments U5. The graduate can communicate using specialized terminology from molecular biology field Social competences K1. The graduate is ready for a critical assessment of the knowledge and received information related to molecular biology
Practice	-
Teaching methods	Power-point presentation, discussion, demonstration, experiments