UNIVERSITY OF WARMIA AND MAZURY IN OLSZTYN

Faculty of Biology and Biotechnology

Course title: CELL BIOLOGY

ECTS credit allocation (and other scores): 4.5

Semester: autumn

Level of study: ISCED-6 - first-cycle programmes (EQF-6)

Branch of science: Natural sciences

Language: English

Number of hours per semester: 60 h.

Course coordinator/ Department and e-mail: Katarzyna Głowacka; Department of Plant Genetics, Physiology and Biotechnology; katarzyna.glowacka@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Introduction to the microscopic techniques. Experimentation, observations and analysis of the cell structure and particular organelles: the cell membrane, the extracellular matrix and cell interactions, the cytoskeleton and cell movement, the cell cycle with the events of M phase, protein sorting, transport and degradation (the endoplasmic reticulum, the Golgi apparatus, the lysosomes), bioenergetics of the cell (mitochondria, chloroplasts, peroxisomes). The analysis of the ultrastructure of organelles – electronograms analysis.

LECTURES: Introduction to the cell biology: cell theory, comparison of eukaryotic and prokaryotic cells. Cell structure and function: the nucleus; protein sorting and transport (endoplasmic reticulum, Golgi apparatus, lysosomes), bioenergetics and metabolism (mitochondria, chloroplasts and peroxisomes); the plasma membrane and extracellular matrix. Cell regulation: cell cycle control, cell death and renewal.

LEARNING PURPOSE: Understanding the characteristic of the cell structure and function, also a subcellular localization of metabolical processes. Learning the ultrastructure of plant and animal cell organelles. Describing the methods of analysis of the structure and function of the cell organelles.

On completion of the study programme the graduate will gain:

KNOWLEDGE: student describes the ultrastructure and function of eukaryotic and prokaryotic cell organelles; student describes the cell theory and the properties of cells as the basic units of structure in all organisms

SKILLS: student can prepare a biological samples for microscopic studies

SOCIAL COMPETENCIES: student knows the purpose of lifelong learning of cell biology

Basic literature: 1.) Bruce Alberts et al., Essential Cell Biology, Wyd. W. W. Norton Company, New York, London, R. 2019. 2.) Lodish et al., Molecular Cell Biology, Wyd. W.H. Freeman and Company, New York, R. 2013. 3.) Karp G., Cell and molecular biology. Concepts and experiments., Wyd. John Willey Sons, Inc., R. 2008

Supplementary literature: 1.) Cooper C.M.; Hausman R.E.,, The cell. A molecular approach., Wyd. ASM Press, Sinauer Associates,, R. 2009. 2.) Bolsover et al., Cell biology. A short course., Wyd. Willey-Blackwell, R. 2011

The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 64 h.

Student's independent work: 48.5 h.