

COURSE DESCRIPTION (SYLLABUS)

| | |
|-----|---|
| 1. | Course: Metabolism of Proteins, Carbohydrates, Nucleotides, and Lipids |
| 2. | Language of instruction: English |
| 3. | Faculty: Faculty of Biotechnology |
| 4. | Course/module code: 29-BT-S1-E3-EnMPCNL |
| 5. | Course/module type (<i>mandatory or elective</i>): mandatory |
| 6. | Programme: Biotechnology |
| 7. | Study cycle (<i>1st/2nd</i>): 1st cycle |
| 8. | Year: 2nd |
| 9. | Semester (<i>autumn or spring</i>): autumn |
| 10. | Form of tuition and number of hours Lectures: 40 h Learning methods: multimedia presentations |
| 11. | Course coordinator(s): Tomasz Trombik, PhD |
| 12. | Initial requirements (<i>knowledge, skills, social competences</i>): Knowledge of structure and function of biomacromolecules. |
| 13. | Objectives: To acquaint student with metabolic pathways (biosynthesis and degradation) of proteins, carbohydrates, nucleotides and lipids occurring in live organisms. |
| 14. | Content: <ul style="list-style-type: none"> • metabolism – the general definition; • glycolysis; • tricarboxylic acid cycle; • electron transport and oxidative phosphorylation; • gluconeogenesis, glycogen and starch metabolism; • pentose-phosphate pathway; • fatty acid oxidation and biosynthesis; |

| | | |
|-----------------|--|---|
| | <ul style="list-style-type: none"> • biosynthesis of triacylglycerols; • metabolism of glycerophospholipids, sphingolipids, isoprenoid compounds and eiconosoids; • metabolism of amino acids; • metabolism of nitrogen bases and nucleotides; • integration of metabolic pathways; • biosynthesis and degradation of proteins. | |
| 15. | <p>Learning outcomes:</p> <p>Student:</p> <ul style="list-style-type: none"> • has knowledge of protein, carbohydrate, nucleotides and lipids metabolism; • has knowledge of terminology, techniques and methodology used in protein, carbohydrate nucleotides and lipids biochemistry; • has ability to use scientific literature on the taught subjects; • has ability to study independently the subjects presented during the lecture; • understands the need for continuing education. | <p>Outcome symbols:</p> <p>K1_W01, K1_W05</p> <p>K1_W06, K1_W08</p> <p>K1_U03, K1_U04</p> <p>K1_U12</p> <p>K1_K01</p> |
| 16. | <p>Recommended literature:</p> <ul style="list-style-type: none"> • Berg JM, Tymoczko JL, Stryer L, <i>Biochemistry</i> 6th ed.2006 • Nelson DL, Cox MM, <i>Lehninger Principles of Biochemistry</i> 5th ed.2008 • Garrett RH, Grisham CM, <i>Biochemistry</i> 4th ed.2008 • Voet D, Voet JG, <i>Biochemistry</i> 4th ed.2011 • Mathews CK, Van Holde KE, Appling DR, Anthony-Cahill SJ, <i>Biochemistry</i> 4th ed., 2013. | |
| 17. | <p>Methods of verification of the assumed learning outcomes:</p> <p>written exam</p> | |
| 18. | <p>Conditions of earning credits:</p> <p>completion of the lecture is based on a written exam result</p> | |
| 19. | Student's workload: | |
| | Activity | Number of hours for the activity |
| | Hours of instruction (as stipulated in study programme) : | 40 h |
| | Student's own work: | 40 h |
| | • preparation for the test and final exam | |
| | Total number of hours: | 80 h |
| Number of ECTS: | 4 ECTS | |