COURSE DESCRIPTION (SYLLABUS)

1.	Course: **Genetic Regulation of Development**
2.	Language of instruction: **English**
3.	Faculty: **Faculty of Biotechnology**
4.	Course/module code: **29-BT-S1-E5-GRDeng**
5.	Course/module type (*mandatory* or *elective*): **elective**
6.	Programme: **Biotechnology**
7.	Study cycle: **1st cycle**
8.	Year **3rd**
9.	Semester *(autumn* or *spring):* **autumn**
10.	Form of tuition and number of hours Lecture: **15 h**
11.	Coordinator(s): **Ryszard Rzepecki, Prof.**
12.	Initial requirements *(knowledge, skills, social competences)*: • **Knowledge of structure and function of biological macromolecules, basic knowledge in biology and physiology.** • **Basic knowledge of embryology and histology may be a bonus.**
13.	Objectives: **Demonstration of basic mechanism governing of the animal development. Mechanisms regulating basic embryonic development. Basic mechanisms involved in regulation of organogenesis and regeneration.**
14.	Content: **Basic interests of developmental biology. Animal experimental biology and animal model systems. Genes and development in general. Signal transduction in development. Cell cycle. Mitosis. Meiosis. Embryogenesis and genetic predeterminations of embryogenesis. Mechanisms governing cell specifications. Determination of polarity in invertebrates and vertebrates. Ectoderm development.**

<table>
<tr><td></td><td colspan="2">Development of mesoderm and endoderm. Organogenesis in invertebrate model systems. Organogenesis in vertebrates. Limb development and regeneration.</td></tr>
<tr><td>15.</td><td>Learning outcomes:
Student:
• can make a qualitative and quantitative description of the basic biological phenomena and processes;
• is able to link theoretical knowledge of biochemistry, biotechnology, molecular biology and microbiology with its practical application in industry, health care and environmental protection;
• makes the synthesis of information from various sources and is capable of correct conclusions based on them;
• can take advantage of the online resources and the literature to obtain information on biological sciences;
• understands the need for continuing education throughout the whole life, including deepening knowledge biological sciences.</td><td>Outcome symbols:
K1_W01, K1_W09, K1_U03, K1_U04, K1_U08, K1_K01</td></tr>
<tr><td>16.</td><td colspan="2">Recommended literature:
• „Developmental Biology” Scott F. Gilbert
• „Genes” B. Levin</td></tr>
<tr><td>17.</td><td colspan="2">Methods of verification of the assumed learning outcomes:
written test</td></tr>
<tr><td>18.</td><td colspan="2">Conditions of earning credits:
written test result</td></tr>
<tr><td rowspan="5">19.</td><td colspan="2">Student’s workload</td></tr>
<tr><td>Activity</td><td>Number of hours for the activity</td></tr>
<tr><td>Hours of instruction (as stipulated in study programme):
• lecture: 15 h
• consultations: 5 h</td><td>20 h</td></tr>
<tr><td>Student’s own work:
• reading the literature
• preparation for the test</td><td>20 h</td></tr>
<tr><td>Total number of hours</td><td>40 h</td></tr>
<tr><td></td><td>Number of ECTS</td><td>2 ECTS</td></tr>
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