**Incoming student mobility**

**Name of UNIOS University Unit: Department of Biology**

**COURSES OFFERED IN FOREIGN LANGUAGE**

**FOR ERASMUS+ INDIVIDUAL INCOMING STUDENTS**

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| **Department or Chair within the UNIOS Unit**  | **Department of Biology** |

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| **Study program**  | **Undergraduate university study programme in biology** |

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| **Study level** | **Undergraduate (bachelor)**  |

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| **Course title** | **Animal physiology I** |
| **Course code (if any)** | **BBO525** |
| **Language of instruction** | **English** |
| **Brief course description** | The purpose of this course is to introduce students to the basic principles of animal organisms functioning, from cellular to the organism level. Lecture topics include: The concept and brief historical development of physiology. Homeostasis. Based control and feedback mechanisms. The basic physical and chemical processes in cells and tissues. Metabolism in cells and tissues. Transport mechanisms in cells and tissues. Physiology of membrane structure. The formation and significance of the electric gradient, bioelectricity and membrane potential. The formation of action potentials and signals on the membrane structures. Physiology of animal systems and integrative physiology: Communication within and between neurons. Signal transmission. General physiological properties of senses. Chemical senses. Mechanical sensors. Temperature sensors. Sight. The flow of information through nervous system. Organization of nervous system. Cellular secretion. Secretory mechanisms. Glands with internal secretion, hypothalamic control. Neurohormones. Cellular mechanisms of action of hormones. Physiological effects of hormones. Invertebrates hormones. Glands with external secretion. Secretion energetics. Basic of muscle contraction. Mechanics and regulation of muscle contraction. Physiology of smooth transversely striped and heart muscle. Foundations of behavioral physiology. General circulation system. Physiology of the heart. Hemodynamics. Peripheral circulation. Regulation of blood circulation. Oxygen and carbon dioxide into animal organ and organs systems. Regulation of pH. Lungs and gills. Regulation of gas exchange. Symmorphosis. Physiology of swim bladder. Vertebrate renal physiology. Vertebrate no renal osmoregulatory organs. Invertebrate osmoregulatory organs. Ammonotelism, urootelism, uricotelism. The physiology of digestion. Basal metabolic and standard metabolic rate. Relationship between biometric parameters and metabolic rate. Energy of motion. Energetic of reproduction.  |
| **Form of teaching** | **Lectures, laboratory exercises** |
| **Form of assessment** | **Written and oral**  |
| **Number of ECTS** | **8** |
| **Class hours per week** | **3 hours lectures + 3 hours laboratory**  |
| **Minimum number of students** | **-** |
| **Period of realization**  | **winter semester** |
| **Lecturer** | **Branimir K. Hackenberger, Ph.D., Full Professor** |