Palacký University Olomouc, Faculty of Education, Department of Biology

Courses for international students for the academic year 2023/2024

KPŘ/YCBIO Essential Concepts of Cell Biology for Secondary School Teachers			
Number of ECTS credits:	5	**Course completion:**	Exam
Completion requirements:	80 % attendance	**Lecturer:**	Martin Jáč
Semester in which the course is taught:		both summer and winter	
Description:			
The course will summarize essential concepts of cell biology, including following topics: chemical components of the cell (sugars, lipids, proteins, nucleic acids), structure of pro-karyotic and eukaryotic cells (structure and function of cell organelles), overview of cellular metabolic pathways (cellular respiration, fermentation, photosynthesis), cell communication and signal transduction; gene expression at the molecular level (DNA replication, transcription, translation, gene regulation), eukaryotic cell cycle, cell division: mitosis and meiosis. Based on the Model of Educational Reconstruction, teaching and learning approaches on the cell concept (including the design of teaching and learning environments) for secondary school level will be discussed throughout the whole course. **Attention: The course only for students focused on biology! The course won't be taught on-line!**			

KPŘ/YMBER Methods in Biology Education Research			
Number of ECTS credits:	5	**Course completion:**	Exam
Completion requirements:	80 % attendance	**Lecturer:**	Martin Jáč
Semester in which the course is taught:		both summer and winter	
Description:			
The course will cover fundamental research methods used in Biology Education Research (BER) including: planning research project, quantitative/qualitative/mixed experimental design, sampling, validity and reliability, tests (including conceptual tests and inventories) and questionnaires, interviews, observation, case studies, data analysis, ethical aspects of biology education research. During the course, scientific and methodological papers from different areas of Biology Education Research will be discussed. Students will also receive systematic feedback during their work on master's (or Ph.D.) theses focused on relevant scientific problem within biology education. **Attention: The course only for students focused on biology! The course won't be taught on-line!**			

KPŘ/YINZO Invertebrate zoology

Number of ECTS credits:	5	**Course completion:**	Exam
Completion requirements:	80 % attendance	**Lecturer:**	Milada Bocáková
Semester in which the course is taught:		both summer and winter / zatím letní	

Description:

At the end of the course students should be able to:
- to explain and compare contemporary hypotheses on animal phylogeny
- to characterize individual groups of "invertebrates", their body plan, distribution, ecology, biology and economic importance

Topics: The history of animal classification and contemporary concepts of animal phylogeny. Basic body plans of "invertebrates". Characteristics, distribution, biology, ecology and economical importance of individual groups: 1. Amitochondriate Excavata, 2. Euglenozoa, 3. Alveolata (Ciliata, Dinoflagellata, Apicomplexa), 4. Cercozoa (Foraminifera, Radiolaria, Heliozoa),), 5. Amoebozoa, 6. Animalia (Choanoflagellata, Metazoa), the position within Opisthokonta. The main lineages of animals and the position of the individual “invertebrate” phyla [Porifera, Placozoa, Cnidaria, Myxozoa, Ctenophora; Bilateria - Acoelomorpha, Mesozoa, Syndermata, Gastrotricha; Ecdysozoa (Cephalorhyncha, Nematoda, Nematomorpha, Panarthropoda: Onychophora, Tardigrada, Arthropoda), Lophotrochozoa (Platyhelminthes; Lophophorata: Brachiopoda, Phoronida, Ectoprocta; Mollusca, Entoprocta, Nemertea, Annelida), Deuterostomia pars (Echinodermata, Hemichordata)].

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KPŘ/YGEMM Introduction to Gemmology			
Number of ECTS credits:	5	**Course completion:**	Exam
Completion requirements:	80 % attendance	**Lecturer:**	Jiří Zimák
Semester in which the course is taught:		both summer and winter	
Description:			
At the end of the course the students should be oriented in the basics of gemmology. Topics: Physical properties of gemstones and ornametal stones in a condensed way: hardness, cleavage, transparency, luster, colour, refractive index, dispersion of light and most important optical effects as asterism, iridescence, chatoyancy, alexandrite effect, etc. Gem cutting. Artifical coloration. Classification of gemstones. Description of best known gemstones and jewelry-ornamental materials: diamond, ruby, sapphire, emerald, aquamarine, zircon, spinel, topaz, opal, chrysolite, alexandrite, tanzanite, thulite, turquoise, rock crystal, rose quartz, smoky quartz, amethyst, garnets, tourmalines, jasper, agates, perls, amber, moldavites, obsidiane, etc. Synthetic analogues and imitations of natural precious stones. **Attention: The course only for students focused on biology! The course won't be taught on-line!**			