

Course title: ICHTHYOLOGY

ECTS credit allocation (and other scores): 2.0

Semester: spring

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

Disciplines: Biological sciences;

Item Status: Optional

Item group: B - major subjects

Branch of science: Natural sciences;

Language: English

Number of hours per semester: 50 h, including contact hours with an academic teacher (32 h) and Student's independent work (18 h).

Course coordinator/ Department and e-mail: Alicja Boroń; Department of Zoology; alibo@uwm.edu.pl

Type of classes: classes and lectures

Substantive content

CLASSES: Identification of representatives of selected orders of fish occurring in fresh and marine waters; functional morphology of fish - indication of features adaptation to specific environmental conditions; embryology and reproductive biology of ray-finned and cartilaginous fish; adaptation of migratory fish and types of migration; fish ecology and behavior; characteristics of selected species of Teleostei fish dominant in inland and marine waters in Europe and the world.

LECTURES: Ichthyology - the science of fish in the past and today; selected aspects of the taxonomy (including genetic), phylogeny and classification of fish; functional morphology - examples of unique among vertebrate adaptations to different habitats and environmental conditions (including migratory fish adaptations and types of migration), embryology and reproductive biology (including reproductive modes and sex determination), ecology and behavior of selected fish taxa among rayfined Actinopterygii, cartilaginous Chondrichthyes and sarcopterygians Sarcopterygii occurring in inland and marine waters; fish welfare; threats to fish diversity and selected ways to protect them.

LEARNING PURPOSE: Acquainting the student with systematics, functional morphology and adaptations to the changing environmental conditions, embryology, biology and ecology of ray-finned fishes Actinopterygii - mainly Teleostei, and selected taxa of chondrichthyans Chondrichthyes and sarcopterygians Sarcopterygii species living in various aquatic habitats, as well as the development of knowledge in ichthyology induced by the introduction molecular biology methods and more and more perfect methods of observing fish in their natural environment.

On completion of the study programme the graduate will gain:

KNOWLEDGE: The student understands features of functional morphology, including adaptive and plasticity in this respect existed fish occurring in different types of aquatic habitats; selected aspects of fish biology and ecology; results of modern fish research using molecular biology methods; achievements in the field of the development of ichthyological knowledge obtained with the use of modern devices for observing fish life in their natural environment; the relationships of fish with other cohabiting organisms.

SKILLS: The student is able to identify selected fish taxa; identify and describe species characterized by specific adaptations to changing environmental conditions and also those used commercially; indicate the habitat requirements of fish and

the main threats as well as the possibilities of protecting their diversity; indicate selected methods, including molecular ones, which contributed to the development of knowledge in the field of ichthyology; skillfully discuss and indicate important problems and stages of knowledge development in the field ichthyology.

SOCIAL COMPETENCIES: The student is ready to work in a team and performing various functions during it; continuous learning, development and verification of own biological knowledge in the field of ichthyology; supporting activities in the field of knowledge and protection of biological diversity.

Basic literature:

1. Peter B. Moyle, Joseph J. Cech Jr., *Fishes: An Introduction to Ichthyology*, publishing as Pearson Benjamín Cummings, San Francisco, edition: 2004, 2000, 2016.
 2. Thomas Keenan, *Ichthyology: An Introduction to Fish Science*, Ed. Larsen and Keller Education, 2018.
 3. Edited by Hirokazu Kishimoto, Nobuhiro Suzuki and Izumi Akagawa, *Laboratory Manual on Fundamental Ichthyology*, Ed. Tokai University Press, 2017.
1. <https://www.pdfdrive.com/fishes-an-introduction-toichthyology189279994.html>
 2. <https://www.pdfdrive.com/laboratory-manual-onfundamentalichthyology-e47779681.html>

Supplementary literature:

1. Edited by Rory Curtis, *Ichthyology and Aquatic Biology*, Ed. White Word Publications, 2018;
<https://www.pdfdrive.com/ichthyology-and-aquaticbiologyd58939239.html>
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The allocated number of ECTS points consists of:

Contact hours with an academic teacher: 32 h.

Student's independent work: 18 h.