



Course syllabus – part A
Fish taxonomy

100S10-SYSRYB

ECTS: 5.50

CYCLE: 2024Z

SUBJECT MATTER CONTENT

LECTURE

Rules governing systematics and taxonomy. The importance of morphological features in systematics: morphometric and biological methods of distinguishing species. Tools of modern systematics. Basics of the taxonomy of jawless and jawed fishes, characteristics of systematic groups with special emphasis on species present in European waters and of importance in world fisheries and aquaculture; phylogeny of fishes; principles of the evolutionary process and the influence of the development of fishes in past eras on the present picture of ichthyofauna. Natural interspecies hybridization and polyploidy in fish. The place of fish in the natural zoological system. Diversity of modern ichthyofauna.

LABORATORY CLASSES

Application of morphological traits in systematics: meristics, biometry and biological methods for distinguishing species. Practical familiarisation with selected fish species based on the natural zoological system. Systematic review of fishes of the orders Petromyzontiformes, Acipenseriformes, Cypriniformes, Siluriformes, Esociformes, Gadiformes, Salmoniformes, Perciformes, Scorpaeniformes, Anguilliformes, Osmeriformes, Gasterosteiformes, Pleuronectiformes - morphological characters, biology, systematic position, importance in fisheries and species conservation.

TEACHING OBJECTIVE

To provide students with knowledge of the rules and modern methods used in systematics and taxonomy. To introduce the systematic position, basic biological features and economic and ecological importance of the representatives of the ichthyofauna of Poland. To get students acquainted with species and taxa in higher systematic categories important in world fisheries and aquaculture.

DESCRIPTION OF THE LEARNING OUTCOMES OF THE COURSE IN RELATION TO THE DESCRIPTION OF THE CHARACTERISTICS OF THE SECOND LEVEL LEARNING OUTCOMES FOR QUALIFICATIONS AT LEVELS 6-8 OF THE POLISH QUALIFICATION FRAMEWORK IN RELATION TO THE SCIENTIFIC DISCIPLINES AND THE EFFECTS FOR FIELDS OF STUDY:

Symbols for outcomes related to the discipline:

R/ZRA_P6S_KK+, R/ZRA_P6S_UW++, R/ZRA_P6S_UK+, R/ZRA_P6S_WG+

Symbols for outcomes related to the field of study:

KA6_UW8+, KA6_UW6+, KA6_KK1+, KA6_WG1+, KA6_UK1+

LEARNING OUTCOMES:

Knowledge:

Legal acts specifying learning outcomes:

51/2021

Disciplines: animal science and fisheries

Status of the course: obligatory

Group of courses: B - directional subjects

Code: ISCED

Field of study:

Scope of education:

Profile of education: general academic

Form of studies: full-time

Level of studies: first degree studies

Year/semester: 1/1

Types of classes: lecture, laboratory classes

Number of hours in semester:

lecture: 15.00, laboratory classes: 45.00

Language of instruction:

Polish/English

Introductory subject: no

Prerequisites: general knowledge at the high school level

Name of the organisational unit conducting the course: Department of Ichthyology and Aquaculture
Person responsible for the realization of the course: dr hab. inż. Piotr Hliwa, prof. UWM
e-mail: phliwa@uwm.edu.pl

Additional remarks: no

W1 – student knows the basic terms and concepts in Polish or English and Latin for the systematics of fish and the basics of the evolutionary process of fish; explains the principles of systematics and defines systematic categories and describes the characteristics of the main fish taxa, recognizes the systematic and biological characteristics of fish inhabiting Polish waters and species important for fishing and aquaculture, identifies fish specimens, classifying them into species, family, order and cluster

Skills:

U1 – uses, at a basic level, available sources of information on vertebrate systematics in the native language and in a chosen modern foreign language, respecting intellectual property rights; uses correct Polish and Latin nomenclature in the field of fish systematics

U2 – Performs observations and a simple research task on fish systematics under the guidance of a supervisor; selects systematics tools to classify fish (meristic, biometric and biological methods); establishes classification criteria; independently analyses and detects systematic features to identify taxa of fish, identifies their habitat and their importance in the ecosystem and in fisheries management

Social competence:

K1 – understands the need to continually improve and update knowledge of fish systematics

TEACHING FORMS AND METHODS:

lecture(W1;):

laboratory classes(U1;U2;K1):Preparation and analysis of specimens; analysis and classification of specimens of individual fish species using methods used in taxonomy

FORM AND CONDITIONS OF VERIFYING LEARNING OUTCOMES:

lecture (written exam) - written examination - (multiple-choice test, structured questions).

Each student is given a sheet with tasks formulated in the form of descriptive questions, instructions to fill in missing items or multiple-choice test questions. -

laboratory classes (written test) - Each student is given a sheet of paper with descriptive questions and instructions to complete the missing items -

laboratory classes (colloquium practical) - Each student is given a set of fish specimens and is tasked with identifying the species, naming them in Polish and Latin and classifying them into higher categories -

laboratory classes (colloquium test) - Each student is given a sheet of paper with tasks formulated in the form of descriptive questions, instructions to complete missing items or multiple choice test questions -

BASIC LITERATURE:

1. Brylińska M (red.), *Ryby słodkowodne Polski*, Wyd. PWN Warszawa, R. 2000
2. Rolik H., Rembiszewski J.M., *Ryby i kręgloustę*, Wyd. PWN Warszawa, R. 1987
3. Więcaszek B., *Podstawy systematyki kręgloustych i ryb*, Wyd. AR Szczecin, R. 1999
4. Krzanowska, H., A. Łomnicki, J. J. Rafiński, H. Szarski, J.M. Szymura, *Zarys mechanizmów ewolucji*, Wyd. PWN Warszawa, R. 1995

SUPPLEMENTARY LITERATURE:

1. Kottelat M., Freyhoff J., *Handbook of European freshwater fishes*, Wyd. Publications Kottelat, R. 2007

Detailed description of ECTS credits awarded - part B

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Systematyka ryb

The number of ECTS credits awarded consists of:

1. Contact hours with the academic teacher:

- participation in: lecture	15.0 h
- participation in: laboratory classes	45.0 h
- consultation	4.0
Total:	64.0 h.

2. Independent work of a student:

10.00 h
24.00 h
10.00 h
5.00 h
30.00 h

Total: 79.0 h

contact hours + independent work of a student Total: 143.0 h

1 ECTS credit = 25-30 h of an average student's work, number of ECTS credit = $143.0 \text{ h} : 26.0 \text{ h/ECTS} = 5.50$ ECTS on average:
5.5 ECTS

- including the number of ECTS credits for contact hours with the direct participation of an academic teacher: 0,00 ECTS points,
- including the number of ECTS credits for hours of independent work of a student: