


KAPITAŁ LUDZKI
 NARODOWA STRATEGIA SPÓJNOŚCI

 Projekt współfinansowany przez
 Unię Europejską w ramach
 Europejskiego Funduszu
 Społecznego

UNIA EUROPEJSKA
 EUROPEJSKI
 FUNDUSZ SPOŁECZNY


Course title		ECTS code	
Fish biology		13.8.1171	
Name of unit administrating study			
Faculty of Oceanography and Geography			
Studies			
faculty	field of study	type	first tier studies (BA)
Faculty of Biology	Biology	form	full-time
		specialty	all
		specialization	all
Faculty of Oceanography and Geography	BRAK TŁUMACZENIA, Water Management and Protection of Water Resources, Geology	type	all
		form	all
		specialty	all
Faculty of Oceanography and Geography	Oceanography	type	first tier studies (BA), second tier studies (MA)
		form	full-time
		specialty	all
Teaching staff			
prof. UG, dr hab. Mariusz Sapota; dr Anna Dziubińska; dr Anna Lizińska; prof. UG, dr hab. Konrad Ocalewicz			
Forms of classes, the realization and number of hours		ECTS credits	
Forms of classes		5	
Laboratory classes, Lecture			
The realization of activities			
classroom instruction			
Number of hours			
Laboratory classes: 45 hours, Lecture: 30 hours			
The academic cycle			
2022/2023 summer semester			
Type of course		Language of instruction	
an elective course		english	
Teaching methods		Form and method of assessment and basic criteria for evaluation or examination requirements	
<ul style="list-style-type: none"> - conducting experiments - group work - multimedia-based lecture - problem solving 		Final evaluation	
		<ul style="list-style-type: none"> - Graded credit - Examination 	
		Assessment methods	
		<ul style="list-style-type: none"> - graded course credit based on individual grades obtained during the semester - written exam (test) - oral exam 	
		The basic criteria for evaluation	

A. Final evaluation
Graded credit
B. Assessment methods
Grades will be determined according to:
Labs:
attendance control, continuous assessment, lab reports, final written assessment (test)
Lectures:
final written (test) and oral assessment
The basic criteria for evaluation
Labs:
final grade based on partial marks received during the course:
10% activity
15% lab reports
75% final test
Lectures:
80% test
20% oral exam

Method of verifying required learning outcomes

ASSUMED LEARNING OUTCOMES	conducting experiments	grup work	tasks solving	lecture with multimedia presentation
	Knowledge			
K_W01				test and oral exam
K_W02				test and oral exam
K_W03				test and oral exam
K_W04				test and oral exam
K_W05				test and oral exam
K_W06				test and oral exam
K_W07				test and oral exam
	Skills			
K_U02	evaluation of work	evaluation of work	evaluation of work	
K_U04	evaluation of work	evaluation of work	evaluation of work	
K_U06	evaluation of work	evaluation of work	evaluation of work	
K_U07	evaluation of work	evaluation of work	evaluation of work	
K_U08	evaluation of work	evaluation of work	evaluation of work	
	Social kompetences			
K_K01	work observation	work observation	work observation	
K_K04	work observation	work observation	work observation	
K_K05	work observation	work observation	work observation	

Required courses and introductory requirements**A. Formal requirements**

None

B. Prerequisites

Basic knowledge of zoology

Aims of education

This course gives knowledge of the basic fish biology and ecology with special emphasis to marine fishes. Basic methods of ichthyological investigations will be presented and practised.

Course contents

Course contents
Fish Biology Investigation Principles
Fish Anatomy
Fish Reproduction

Fish Growth
Fish Behaviour
Fish Ecology
Fish Genetics

Bibliography of literature

- Bone Q.M.A., Marshall N.B., 1982, Biology of fishes, Blackie, Glasgow and London.
 Brown T. A., 2006, Genomes, Garland Science.
 Cailliet G.M., Love M.S., Ebeling A.W., 1986, Fishes, Wadsworth Publishing Company, Belmont, California.
 Campana, S. E., and J. D. Neilson. 1985. Microstructure of fish otoliths. Can. J. Fish. Aquat. Sci. 42: 1014–1032.
 Emery W.J, Thomson R.E., Data analysis methods in physical oceanography. Elsevier 1997.
 Fletcher H., Hickey I., Winter P., 2007, Genetics, Taylor & Francis.
 Hartl D.L., Clark A.G., 2007, Principles of population genetics, Sinauer Associates, Sunderland.
 Hoar W.S. & D.J. Randall, Fish physiology, 2011.
 Holt G. J., Larval fish nutrition, Wiley Blackwell, 2011.
 Huet M., 1994. Textbook of Fish Culture. Breeding and Cultivation of Fish. Fishing News Books, Blackwell Scientific Publ., Ltd., Oxford.
 Lagler K.F., Bardach J.E., Miller R.R., May Passino D.R., 1997, Ichthyology, Wyd. John Wiley & Sons, New York, Chichester, Brisbane, Toronto.
 M. Landau, Introduction to Aquaculture, Wiley, 1991.
 Richmond, Handbook of Microalgal culture, Blackwell, 2003.
 Ricker W.E., 1975, Computation and Interpretation of Biological Statistics of Fish Populations, Department of the Environment Fisheries and Marine Service, Ottawa 1975, p:382.
 Schreck C.B., Mole P. B., 1990, Methods for Fish Biology American Fisheries Society, Bethesda, Maryland.
 Sloman K., Balshine S., Wilson R. (eds), Fish Physiology: Behaviour and Physiology of Fish, ELSEVIER, Academic Press, 2005, pp. 504.
 Smith, L.S. 1982. Introduction to Fish Physiology – T.F.H. Publication, Inc.
 Wotton R. J., 1992, Fish Ecology, Springer; ISBN-10: 0216931525.

- Extracurricular readings

- Baldisserotto Bernardo, J.M. Mancera Romero, B.G. Kapoor (Eds) 2007. Fish Osmoregulation. Science Publishers.
 Campana, S. E., and J. D. Neilson. 1985. Microstructure of fish otoliths. Can. J. Fish. Aquat. Sci. 42: 1014–1032.
 David H. Evans, James B. Claiborne (Eds). 2005. The Physiology of Fishes, Third Edition. Hardback CRC Press.
 Harden Jones F. R., 1970, Fish migrations Edward Arnold Ltd. London.
 Hoar W.S., D.J. Randall. 1971. Fish Physiology (I-V). Academic Press Inc.
 Roderick Nigel Finn, B.G. Kapoor (Eds). 2008. Fish Larval Physiology. Science Publishers.
 Schreck C.B., Mole P. B., 1990, Methods for Fish Biology American Fisheries Society, Bethesda, Maryland.
 Secor, D. H., J. M. Dean, and E. H. Laban. 1992. Otolith Removal and Preparation for Microstructural Examination: A User's Manual. The Electronic Power Research Institute and the Bell W. Baruch Institute for Marine Biology and Coastal Research.

The learning outcomes (for the field of study and specialization)

P6U_W: P6S_WG - K_W01, K_W02, K_W03, K_W04, K_W05, P6S_WK - K_W06, K_W07
 P6U_U: P6S_UW - K_U02, K_U04, K_U06; P6S_UO - K_U07, K_U08
 P6U_K: P6S_KO - K_K01, K_K04, K_K05

Knowledge

Knowledge

- K_W01 Students describe the basic concepts in the field of fish biology and ecology, particularly in the Baltic Sea.
 K_W02 Students understand how to draw conclusions and make inferences based on basic parameters of fish populations.
 K_W03 Students correctly describe the role of fish in water ecosystems functioning.
 K_W04 Students distinguish specific tools that are proper for basic ichthyological investigations and can explain the rules of their application.
 K_W05 Students know the basic techniques, research methods and tools that are used on the job by a fish biologist.
 K_W06 Students recognize potential threats to fish communities structure resulting from the development of civilization, in particular from intense human impact in the Baltic Sea. Students describe the basic role of fish as marine resources.
 [K_7, K_W07] Students define the basic rules of safety in the ichthyological laboratory.

Skills

Skills

- K_U02 Students choose and apply the basic research techniques and tools in the field of fish biology that are adequate for the considered research problem. Students conduct observations and basic laboratory and field ichthyological measurements.
 K_U04 Students independently search for and comprehend English literature in the field of fish biology. Students use the available sources of ichthyological information, including multimedia and Internet resources.

K_U06 Students evaluate and elaborate the used resources of fish biology knowledge.

K_U07 Under the supervision of an academic advisor, students perform the basic scientific tasks related to the fish analysis by using appropriate descriptive and identification methods.

K_U08 Students prepare documented elaboration or multimedia presentation poster on the selected problem in fish biology.

Social competence

Social competence

K_K01 Students can cooperate and work as a fish biology research team by assuming different roles.

K_K04 Students know the limitations of their own ichthyological knowledge; they understand the importance of life-long learning and professional training.

K_K05 Students are responsible for their own and others' safety at work. Students are aware of the risks and threats associated with working as a fish biologist in the laboratory, at sea and on land.

Contact

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