



## AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Research Methods in Fish Biology							
Course Code		BİO617		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	7	Workload	171 (Hours)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		Main objective is to present relevant knowledge of research methods applied in fish biology. Description of main topics in fish biology, i.e. reproduction, growth and growth models, ageing methods, mortality rates and stomach content analysis.							
Course Content		Introduction to fish biology; expressing the main statistical methods; concepts of population and stock; fish ageing and determination of growth parameters; the reproductive biology of fishes; stomach contents analyses; estimation of fish biomass							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, Discussion, Problem Solving					
Name of Lecturer(s)									

### Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

### Recommended or Required Reading

1	Pauly, D. 1984. Some Simple Methods for the Assessment of Tropical Fish Stocks. FAO Fisheries Tech.Paper No. 234, Rome, 52 p.
2	Sparre, P., Venema, S.C. 1998. Introduction to Tropical Fish Stock Assessment – Part I, Manual. FAO Fisheries Tech.Paper No.306/1, Rev.2, Rome, 400 p.
3	Karataş, M. (ed.) 2005. Research methods in fish biology. Nobel Press, Ankara, 498 p.

Week	Weekly Detailed Course Contents	
1	Theoretical	Description and purpose of fish biology research
2	Theoretical	Fish biology studies in Turkey
3	Theoretical	The stock concept
4	Theoretical	Basic statistics used in fisheries research
5	Theoretical	Fish ageing methods - I (cartilaginous fishes)
6	Theoretical	Fish ageing methods - II (bony fishes)
7	Theoretical	Estimation of the fish growth parameters (via bony structures)
8	Theoretical	Estimation of fish growth parameters (from length frequency data)
9	Theoretical	Estimation of fish growth parameters (by other empirical methods)
10	Theoretical	Reproductive biology of fishes
11	Theoretical	Estimation of length at first maturity of fishes
12	Intermediate Exam	Mid Term Exam
13	Theoretical	Stomach content analyses
14	Theoretical	Estimation of mortality parameters
15	Theoretical	Biomass estimation of demersal fish stocks
16	Theoretical	Biomass estimation by underwater visual censuses
17	Final Exam	Final Exam

### Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	15	1	3	60
Assignment	5	4	1	25
Laboratory	5	2	3	25
Reading	15	1	2	45
Midterm Examination	1	6	2	8



Final Examination	1	6	2	8
Total Workload (Hours)				171
[Total Workload (Hours) / 25*] = ECTS				7
*25 hour workload is accepted as 1 ECTS				

### Learning Outcomes

1	Understanding the basic statistical methods used in fish biology studies
2	Estimation of fish growth by different methods
3	Description of methods used in stomach contents analyses
4	Estimation of reproduction period and the length at first maturity of fishes
5	Calculation of mortality of fish stocks
6	Estimation of fish biomass

### Programme Outcomes (Biology Doctorate)

1	To have enough scientific background knowledge towards a specific study and research area
2	To have an ability to identify, evaluate and develop a solution for a problem on biological aspects
3	To be able to evaluate scientific observations and results of experiments using statistical analysis methods
4	To have basic skills in areas related to field of biological studies
5	To have the ability to develop cooperation with different disciplines with the high level of social communication required for studies
6	To have knowledge of technology and use of methods and means used in biological researches
7	To have an ethical understanding which will be a guide for their investigations and publications
8	For PhD; to have European Language Portfolio C1 general level language skill
9	To be able to present and discuss own research results in accordance with scientific discipline using technological tools in scientific research environments
10	To be able to detect and evaluate economic and social impacts of an own original research results
11	To be equipped with ability of carrying out independent study in biological field
12	To be able to publish at least one an international/national peer reviewed scientific paper and/or produce or interpret an original work related to biology in order to expand the frontiers of knowledge
13	To be able to develop new approaches or adaptations to be used in solving scientific and biological problems
14	To be able to develop new understanding and approaches in order to explain a new phenomenon or a biological event under investigation
15	To have abilities and experience to create new search area through inspiration gained from subject searched

### Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5	L6
P1	5					
P2		5				
P3			5			
P4				2	2	2

