



AMERICAN UNIVERSITY OF BEIRUT
Faculty of Arts & Sciences
Department of Biology

Course: Ichthyology (BIOL 281; 3.0; 3cr.)

Instructor: Dr. Michel Bariche

Office: Room 105, Biology bldg.

Textbook: Moyle P.B., Cech J.J., 2004. Fishes. An introduction to Ichthyology. Prentice Hall.

Supplement: Helfman G.S., Collette B.B. & Facey D.E., 2009. The Diversity of Fishes. Wiley-Blackwell.

COURSE DESCRIPTION

An introductory course designed to familiarize students with fishes, the most numerous and diverse group of vertebrates. It encompasses species diversity, general morphology, natural history, behavior and ecological and evolutionary relationships as well as a close look of the most represented families in the eastern Mediterranean. It also deals with the causes of declines in fish diversity and abundance and conservation.

COURSE CONTENTS

INTRODUCTION

The science of ichthyology

STRUCTURE AND FORM

Form and movement

Respiration

Feeding, nutrition, digestion and excretion

Growth

Reproduction

Early life history

THE FISHES

Systematics, genetics, and speciation

Hagfishes and lampreys

Sharks, rays, and chimaeras (emphasis on eastern Mediterranean species)

Teleosts (emphasis on eastern Mediterranean species)

ZOOGEOGRAPHY OF MARINE FISHES

Indo-Pacific region

North Temperate region

CONSERVATION

Causes of decline in fish diversity and abundance

Fisheries management

Reserves

Conclusions

GENERAL INSTRUCTIONAL OBJECTIVE

Students will acquire basic knowledge about major groups of fishes, with a special emphasis on their adaptations and diversity in the eastern Mediterranean region.

SPECIFIC LEARNING OUTCOMES

At the end of this course, students will be able to:

	Learning outcome	LO	Means of attainment	Means of assessment
1	Demonstrate knowledge concerning the science of ichthyology and its history	14	T,P,D	WE,D
2	Understand fish diversity from the large variety of body shapes	2,5,6	T,A,P,D	WE,P,D
3	Understand fish diversity from their feeding habits and feeding mechanisms	2,5,6	T,A,P,D	WE,P,D
4	Understand the importance of studying fish growth as indicator of health in individuals, populations or communities	2,5,6	T,A,P,D	WE,P,D
5	Understand fish reproduction and various strategies	2,5,6	T,A,P,D	WE,P,D
6	Understand systematics and speciation and different taxonomic methods used in ichthyology	5,6	T,A,P,D	WE,P,D
7	Demonstrate knowledge in jawless fish diversity and natural history	5,6	T,A,P,D	WE,P,D
8	Demonstrate knowledge in cartilaginous fish diversity and natural history	5,6	T,A,P,D	WE,P,D
9	Demonstrate knowledge in bony fish diversity and natural history	5,6	T,A,P,D	WE,P,D
10	Understand how evolution and zoogeography have shaped natural selection of major groups of fishes	5,6	T,A,P,D	WE,P,D
11	Demonstrate familiarity with the Lebanese ichthyofauna	5	A,P,D	WE,P,D
12	Understand difference between the Indo-Pacific and the north temperate zoogeographical regions	5,6	T,A,P,D	WE,P,D
13	Evaluate the impact of the Suez canal opening on the Mediterranean sea ecosystem	2,6	A,P,D	WE,P,D
14	Evaluate the impact of fisheries and conservation on fish stocks and habitats	5,14	T,A,P,D	WE,P,D
15	Prepare and deliver a research paper in oral form illustrating research in a specific field of ichthyology	11,12,13	P,D	P,D
16	Understand and use of proper vocabulary	1	T,A,P,D	WE,P,D

T= textbook/A=additional readings/P=PPT presentation/D=class discussion/L=lab session/F=field session/
WE=written exam/LE=lab exam/LR=lab report

Journal Paper Presentation:

Readings of current original research papers in the field of ichthyology will supplement the lecture material. Each student will select a peer-reviewed journal research paper and give a 10-12 minute presentation with an additional 3-5 minutes for questions to the class at the end of that lecture day. The presentation should address the goals of the research, the methods employed to carry out those goals, what was learned from the study, what conclusions were supported by the data, what the limitations were, if any, and how might the study be improved or expanded. Oral presentations should be in PowerPoint format. Only one presentation will be given at the end of any lecture and will be graded by your classmates and myself. You will receive a summary-grading sheet of the scores so that reviewers remain anonymous.

GRADING

Midterm Exam = 100 points

Final Exam = 100 points

Journal paper presentation = 40 points

Attendance and participation = 10 points

Total = 250 points

IMPORTANT

Attendance is mandatory. You must have an approved university excuse for missing an exam otherwise you will be assigned a score of zero. Make-up exams are oral and will cover all the required chapters. Cheating will not be tolerated and will be dealt with severely. We all realize that grades are very important in a highly competitive pre-med environment, but please do not risk your grade, reputation, and career by falling prey to this temptation.

No cell phones and no programmable calculators are allowed in examination rooms.