Department of Fish Res. And aquatic animals

College of Agriculture

Salahaddin University-Erbil

Subject: Fish Taxonomy

Course Book – (Year: 2nd)

Lecturer's name: Asst. Prof. Dr. Samir J. Bilal

Academic Year: 2021/2022

Course Book

1. Course name	**Fish Taxonomy**
2. Lecturer in charge	**Dr. Samir J. Bilal**
3. Department/ College	**Department of Fish Res. And aquatic animals/ College of Agriculture**
4. Contact	**samir.bilal@su.edu.krd**
5. Time (in hours) per week	**Theoretical 2 hr + Practical: 3 hrs**
6. Office hours	**12hrs**
7. Course code	
8. Teacher's academic profile	**Dr. Samir J. Bilal** **Lecturer in Fish Parasitology** **Profile** **1- B. Sc. at Biology Department, College of Education, Salahaddin University-Erbil, Kurdistan-Iraq. 2000-2001** **2- M.Sc. at Biology Department, College of Education, Salahaddin University-Erbil, Kurdistan-Iraq. 2006.** **3- Ph.D. at Biology Department, College of Education, Salahaddin University-Erbil, Kurdistan-Iraq. 2013.** **Career** **Lecturer in 8/7/2013.** **23 published papers.** **10 internal conferences participation.** **2 international conferences participation.** **Describing of 2 new species of fish parasites.** **New records for 7 parasite species in Iraq.**
9. Keywords	**Parasitology, Biology, Education.**

10. Course overview:

This course provides a comparative examination of selected freshwater fishes to illustrate the influence of aquatic environments on life styles, behavioral patterns, physiological responses, population biology and community structure. The use of niche,

habitat and ecotope concepts in defining the role of fishes in representative types of aquatic ecosystems will be examined.

This course also provides a practical experience in the study of fishes. Using University collections of prepared and preserved specimens, students will develop and apply skills in identification and sampling, explore relations between species diversity and habitat, and investigate, through guided study, the extent of anatomical, skeletal, reproductive and morphological variation and its functional and evolutionary causes.

11. Course objective (Intended Learning Outcomes)

1. Have an increased understanding of the evolutionary origins of the major fish taxonomic Classes, with emphasis on the bony fishes.
2. Have a greater understanding of the genetic and environmental factors regulating reproduction in fishes.
3. Gain an understanding of the various 'modes' of reproduction in fishes.
4. Have knowledge of how abiotic factors influence adaptive capabilities in fishes.
5. Have greater insight into how growth is regulated in fishes.
6. Gain a heightened understanding of the various sensory modalities in fishes and how these anatomical and physiological adaptations interact in the social development of fishes.
7. Understand how the mechanisms discussed in point 6 above are influential in the speciation processes in fishes

12. Student's obligation

Students must attend at the lectures. At the beginning of each lecture, they are done a quiz about last lecture. At the end of each lecture, I will ask one or two question/s about the present lecture. For the next lecture, students must bring their own answers. Each student must make one assignment about a group of fishes.

13. Forms of teaching

Different forms of teaching will be applied to reach the objectives of the course: power point presentations for the head titles, definitions and description images, summary of conclusions, classification of materials and any other illustrations, besides worksheet will be designed to let the chance for practicing on several aspects of the course in the classroom, furthermore students will be asked to prepare fortnightly reports about selective topics.

14. Assessment scheme

The students are required to do one closed book exam at the mid of the semester besides other assignments including daily activities, quizzes, and experimental results and precise. The exam includes 10 marks, classroom activities; quizzes and precise works regard as an additive scales. There will be a final exam on 100 marks.

15. Student learning outcome:

After this term students should be able to...

I. Obtain general information about fish biology and their different groups.
II. Explain the traits of fish body structures.
III. Identify the genera of different families and make a difference between them
IV. Describe the properties of fish groups and studying of their life cycle.
V. Diagnose the different types of fish adaptations which found in our country.
VI. Make the difference between the different fishes and inform their biology variations.

16. Course Reading List and References:

Book:

1. Balon, E.K., D.L.G. Noakes, R. Danzmann & m.T. Rush-Smyth. 2016. Ichthyology Primer. 2016. Editor: marie Thérèse Rush-Smyth. Department of Integrative Biology, College of Biological Science, University of Guelph, Guelph, Ontario, Canada.
2. Paul J.B. Hart and John D. R. (2002). Handbook of Fish Biology and Fisheries, FISH BIOLOGY. Blackwell Publ., 413pp.

3. Barton, M. 2007. Bond's Biology of Fishes, 3rd edition. Brooks/Cole.
4. Bond, C. 1996. Biology of fishes, 2nd ed. Saunders College Publishing, Orlando, FL.

5 Bone, Q., N.B. Marshall, and J.H.S. Blaxter. 1995. Biology of fishes, 2nd ed. Blackie Academic and Professional, Glasgow (Chapman and Hall, New York).

Useful internet references

a. http://lss.at.ufl.edu
b. virginias@usca.edu
c. https://www.uoguelph.ca/registrar/calendars/undergraduate/current/index.shtml

17. The Topics:		**Lecturer's name**
		ex: (3 hrs) ex: 14/9/2016
Weeks	**Lectures**	**Lecturer's name** **Didar Othman**
1.	**Fish Taxonomy** **- What are the Tools of Taxonomy?** **- Why do the names change?**	**ex: (3hrs)** **ex: / /2016**
2.	**Terminology**	
3.	**Terms for groups of organisms**	
4.	**Taxonomic identification keys**	
5	**1st Exam**	
6	**Class: agnatha** **Lampreys** **Hagfishes**	
7	**Class: Chondrichthys** **Elasmobranch fishes** **Holocephali**	
8	**Class: Chondrichthys** **Sting ray and skates Fishes**	
9	**Class : Osteichthyes.** **Order: Salmoniformes.**	
10	**Class : Osteichthyes.** **Order: Muglidiformes.**	

11	**Class : Osteichthyes.** **Order: Cyprinidiformes.**	
12	**Lung Fishes**	
13	**Eels and Electric eels.**	
14	2nd exam	

18. Practical Topics (If there is any)

Laboratories
Lab 1: Parade of Fish Classes & Orders
Lab 2: Structural Diversity
Lab 3: Ontogeny and the Environment
Lab 4: Reproductive Strategies
Lab 5: Comparative Osteology / Form & Function
Lab 6: Meristics & Morphometrics / Quantification of developmental asymmetry
Lab 7: Freshwater Fishes Identification
Lab 8: Marine Fishes Identification
Lab 9: Schooling Behaviour
Lab 10: Final Lab Evaluation
Lab 11: Recapitulation

19. Examinations:

1- Fill the Blanks.

2- True and False.

3-Essay.

4- Drawings.

20. Extra notes:

21. Peer review