

Course Book

1. Course name	Ichthyology
2. Lecturer in charge	Mr. Safeen Othman Sediq
3. Department/ College	Animal Resources
4. Contact	e-mail: safeen.sediq@su.edu.krd Tel: 009647504659068
5. Time (in hours) per week	Theory: 2 Practical: 3
6. Office hours	3 hours/Week
7. Course code	
8. Teacher's academic profile	I gained a PhD degree in January 2012 in Fish Nutrition and Health at the University of Plymouth in UK. I have MSc Degree in Shellfish Biology, Fisheries and culture in 2008 at Bangor University. I have got a BSc in 2002 in Animal Resources Agriculture College University of Salahaddin-Erbil, Kurdistan Region of Iraq. I employed in 2002 at the Animal Resources Department in Agriculture College. In 2012 I started to work as a Lecturer in Animal Resources Department and gave a lecture to undergraduate students (1 st , 2 nd and 4 th year) and also to the postgraduate students. In 2014 I submitted a proposal to establish a first department in Kurdistan Region for study fish and aquatic organisms. I appointed as a Head of Fish Resources AND Aquatic Animals from 2014 until now.
9. Keywords	Type of Fish, Fish Diversity, Ornamental fish, Iraqi and Kurdistan Region Fish, External and internal characteristics of fish.
10. Course overview:	<p>In this section the lecturer shall write an overview about the subject he/she is giving. The course overview must cover:</p> <p>This course is essential for students who are studying in fish resource and Aquatic animals department. To have adequate information on the fish sciences including freshwater and marine species (Aquaculture and Fisheries), the course provides basic information through lectures, practical, seminars and field trip.</p> <p>Also, gives a brief introduction on Shellfish; crustacean, molluscan and bivalves. Provide and understanding the distribution and classification of</p>

the fish relating to their geographical place in the world. To provide a theoretical and practical introduction to the study of the fish science, the fish lectures cover internal and external anatomy, biology, physiology, reproduction and ecology.

Obtain practical experiences in studying the local fish species, to have brief information about the fish such as; introductory text, distribution, habitat, size, breeding and status.

This should not be less than 200 words

11. Course objective:

First: To understand the fish history, Taxonomy, and the important species of the fish.

Second: To be familiar with fish group's e.g. Marine fish, Freshwater fish brackish water fish.

Third: To have enough information on fish biology, physiology, histology and external morphology of the fish and also internal anatomy of fish.

Fourth: To have knowledge about aquatic animals and aquatic environment.

Fifth: To have a general idea on Ornamental fish, Biological characteristic and its diversity.

Sixth; To understand the life cycle of fish's and other aquatic animals.

Seventh: Fish and shellfish and other aquatic species as important source of food for humanity.

This should not be less than 100 words

12. Student's obligation

In this section the lecturer shall write the role of students and their obligations throughout the academic year, for example the attendance and completion of all tests, exams, assignments, reports , essays...etc

Students must attend in all lessons and theory/ practical exams. Writing report, participating filed trips.

13. Forms of teaching

Power point, White board, World Documents.

14. Assessment scheme

Breakdown of overall assessment and examination

An overall mark of the module is 100%. This will divide into:

60% for final exam (40% theory and 20% Practical part)

40% for the exams during this semester (25% theory (20% on exam and 5% on report, quizzes and class activity), and 15% practical part (10% on exam and 5%

on report, quiz's and activity at the class). There will be two exams for theory and two exams for practical part.

15. Student learning outcome:

پڙڪرڻهوهي ٺهه خانهيہ زور گرنگه، ماموستا دهر ٺههجامهڪاني فيربوون دهنوسيت. بو نمونه: پروني ٺامانجه
سهه مڪيهڪاني ڪورسهڪه (بابهٽهڪه) بو خويندڪار
گونجاندي ناوهوڪي ڪورسهڪه به پيوستي دهرهوه و بازاري ڪار
قوتابي چي نوي فيردهبيت له ريگهي پيداني ٺهه ڪورسهوه؟

This should not be less than 100 words

16. Course Reading List and References:

Bostock, J. McAndrew, B. Randolph, R. Jauncey, K. Telfer, T. Lorenzen, K. Little, D. Ross, L. Handisyde, N. Gatward I. Corner R., (2010) Aquaculture: global status and trends. Philosophical Transactions Of The Royal Society; Biological Sciences, 365: 2897–2912.

Helfman, G.S. Collette, B.B. Facey, D.E. Bowen, B.W. (2009) The diversity of fishes, biology, evolution and ecology. Second edition. 2009. ChiChester , West Sussex, UK.

Barnabe, G., (2005) Aquaculture, biology and ecology of cultured species. Hertfordshire, UK.

Billard, R., (1995) Carp: Biology and Culture. © IRNA, Paris1995.

Globefish website: www.globefish.org

Food and Agriculture Organization, (2016) The State of World Fisheries and Aquaculture, Rome.

17. The Topics:

History of Ichthyology

Lecturer's name

Mr. Safeen Othman Sediq

Jawless Fish	Mr. Safeen Othman Sediq
Bony Fish	Mr. Safeen Othman Sediq
Cartilage Fish	Mr. Safeen Othman Sediq
Diversity of Fish (Species, Habitat)	Mr. Safeen Othman Sediq
Diversity of Fish (Life Span, Size)	Mr. Safeen Othman Sediq
Diversity of Fish (Brooding, Breeding, Feeding)	Mr. Safeen Othman Sediq
Mid Exam	Mr. Safeen Othman Sediq
Diversity of Fish (Vision, locomotion)	Mr. Safeen Othman Sediq
Field Trip	Mr. Safeen Othman Sediq

Diversity of Fish (Toxicity, Human use)	Mr. Safeen Othman Sediq
World Ornamental Fish	Mr. Safeen Othman Sediq
Kurdistan Ornamental Fish	Mr. Safeen Othman Sediq
Iraqi and Kurdistan Region Fish	Mr. Safeen Othman Sediq
Final Exam	Mr. Safeen Othman Sediq
18. Practical Topics (If there is any)	
General Characteristics of jawless; Body shape, coloration, senses	Mrs. Mihraban Jalal K.
General Characteristics of cartilage; Body shape, coloration, senses	Mrs. Mihraban Jalal K.
General Characteristics of bonyfish; Body shape, coloration, senses	Mrs. Mihraban Jalal K.
External Characteristics of jawless,; Head, fins, mouth shapes, tail, skin, scale and fish measurement	Mrs. Mihraban Jalal K.

External Characteristics of cartilage; Head, fins, mouth shapes, tail, skin, scale and fish measurement	Mrs. Mhraban Jalal K.
External Characteristics of bony fish; Head, fins, mouth shapes, tail, skin, scale and fish measurement	Mrs. Mhraban Jalal K.
Midterm Exam	Mrs. Mhraban Jalal K.
Internal anatomy of jawless, cartilage and bony fish	Mrs. Mhraban Jalal K.
Skeleton & Cartilage system & Digestive system	Mrs. Mhraban Jalal K.
Visit to hatchery station in Erbil	Mrs. Mhraban Jalal K.
Circulatory systems	Mrs. Mhraban Jalal K.
Immune and nerves systems	Mrs. Mhraban Jalal K.
Reproduction system	Mrs. Mhraban Jalal K.

Respiratory systems	Mrs. Mihraban Jalal K.
Final Exam	Mrs. Mihraban Jalal K.

19. Examinations:

1. Compositional: In this type of exam the questions usually starts with Explain how, What are the reasons for...?, Why...?, How....?

With their typical answers

Examples should be provided

2. True or false type of exams:

Q. Indicate False or True for the sentences; Correct the False sentences

- The colour of comet fish is a red and green variety called Sarasa.
- In Egypt; drawing in tombs dated about 2000 B.C. show tilapia were found.
- One of the longest living sport fish is the Atlantic tarpon, with age of 45 years.
- There are five Grades of tetrapoda.
- Most fish live in warmer environments with relatively stable temperatures.
- The family of common stingray is Dasyatidae .
- Two stripe damselfish can signal secret alarms by reflecting ultraviolet to other fish
- The sub class of Atlantic sturgeon is Actinopteryg.
- Special requirement for common Goldfish is ample filtration.
- Great white shark gestating eggs in the uterus for 9 months before giving birth.
- The example of live bearers such as guppies, swordtails, mollies and platies.
- Aristotle 384-322 BC worked on 85 fishes obtained from Aegean close to Greece.
- Anchovy; schooling anchovy are forage fish is example of fish according to human use.
- The subfamily of bowfin fish is Amiinae.
- Bony fishes first appeared about 450 million years ago in freshwater.
- Systematics is the study of relationships between organisms; degree of order and family.
- Fish species diversity is not divided equally between marine and freshwater ecosystems.
- Lobe finned fish groups is a type of cartilage fish which include coelacanth and lungfish.
- Sinarapan is the world's smallest fish; they have an average length of 12.5 mm.
- There are two types of ray finned fishes; chondrosteans and teleosts
- The family of Hydrolagus colliei is Suluridae.
- Peter Artidi 1705-1734 Father of Ichthyology divided the fishes proper into 4 orders
- Male of the anglerfish species are 6-8.3 mm long at maturity.
- The order of the Atlantic sturgeon and is Acipenseriformes.
- Aquaculture (common carp) in China began 6500 years ago.
- The common name of Carcharodon carcharias is white Pointer.

- Stone loach; The Tibetan lives at altitudes over 5,200 meters in the Himalayas.
- Golden barb are hardy, colourful, and moderate to keep.
- A Sumerian text described habits and appearance of many species of fish in 2000 B. C.
- Stone loach; The Tibetan lives at altitudes over 4,200 meters in the Himalayas.
 - The skeleton jawless fish is made up of cartilage and found in marine water.
- There are over 200 finfish species south of the Antarctic Convergence.
- The family of Great white shark is Lamnidae.
- The scalloped hammerhead bearing its young before nourishing hatchlings internally.
- Well known egg scatterers include goldfish, danios, tetras, and barbs.
- H. Salviani (1514-1572); described 82 fishes of Italy (Rome).
- Atlantic cod; fisheries have collapsed is an example of fish according to human use. **3.**

Multiple choices:

Q. Match the following aquatic species to their groups

Crawfish, Koi, Tetra, Grass carp, Sinarapan, Toad fish, Common Tela, Great white shark, Anchovy, Archerfish, Clam, puffer fish, Auratus, Dwarf Seahorse, Cherry barb, Indo-Pacific sailfish, Stone loach, Yellow tang, Knight Gobies

20. Extra notes:

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

21. Peer review

پیداچوونہوہی ھاوہل

Prof Shamal MuhammedAmin Abdulla

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

(A peer is person who has enough knowledge about the subject you are teaching; he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).

ئہم کورسبووکه دہبیت له لایمن ھاوہلئیکی ئەکادیمیہوہ سہیر بکریت و ناوہرۆکی بابہتہکانی کورسہکە پەسەند بکات و چەند ووشەیک بنووسیت لەسەر شیاوی ناوہرۆکی کورسہکە و واژووی لەسەر بکات. ھاوہل ئەو کەسەیکە کہ زانیاری ھەبیت لەسەر کورسہکە و دہبیت پلہی زانستی لە ماموستا کەمتر نەبیت.