



Course Specifications

Course Title:	Ichthyology
Course Code:	2014204 -3
Program:	Bachelor in Zoology
Department:	Biology Department
College:	College of Sciences
Institution:	Taif University

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A. Course Identification

1. Credit hours: 3h
2. Course type a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/> b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: 11 th Level / 4 th year
4. Pre-requisites for this course (if any):
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	6 hours /week	100
2	Blended		--
3	E-learning		--
4	Distance learning		--
5	Other		--

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	30
3	Tutorial	-
4	Others (specify)	-
	Total	60

B. Course Objectives and Learning Outcomes

<p>1. Course Description: This course deals with studying different types and distribution, and history of ichthyology, It deals with the scientific classification of fishes, the phenotype and the anatomical structure of different body systems. Types of fish farming, integrated and limited farming system for fish, water quality of fish farms and the most important physical and chemical water characteristics, reproductive systems in fish and reproductive cycles and the influence of environmental factors on them, reproduction of fish under agricultural breeding conditions (natural hatching, industrial hatching), induced spawning and hatching Incubation of tilapia eggs and larvae and even marketing.</p>
<p>2. Course Main Objective:</p> <p>1- Introducing the student to the scientific classification of fish, methods of dividing and knowing the general characteristics of fish, and distinguishing between cartilaginous and bony fish, as well as his familiarity with the external and internal form of the fish body organs.</p> <p>2- Acquainting the student with fish farming in terms of its methods, types, and objectives, the quality of water in fish farming ponds, as well as the chemical and physical properties.</p>

3- Introducing the student to the physiological events that lead to the reproduction of fish, natural and industrial methods of reproduction, and methods of raising larvae to marketing.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding:	
1.1	Differentiate various fish groups based on their characters of external and internal shape.	K2
1.2		
2	Skills:	
2.1	Analyze different scientific facts related to water quality and their most important physical and chemical properties.	S1
2.2	Fish culture - Limited Fish culture System - Integrated Fish culture System - Pond culture - Cage culture - Canals culture - culture in the Sea.	S3
3	Values:	
3.1	Examination of food and microorganisms content of stomach and digestive tract, and analyzed microscopically.	V1
3.2	Discussion about hatching and incubating eggs and larvae of fish (tilapia) even their marketing.	V3

C. Course Content

No	List of Topics	Contact Hours
1	Chapter 1: Historical introduction to fish and their distribution - General features of the Chordates Division - Classification of fish - Division of fish according to the type of food - Division of fish according to food behavior - Division of fish according to their migration, type of water in which they live, methods of reproduction, activity periods, social behavior and fish division according to appearance.	2L+3P
2	Chapter 2: Scientific classification - above the row of lambs such as lamprey or lamprey fish (petromyzon) - grouse fish - general characteristics or characteristics of round-mouthed fish - phenotype of round-mouthed fish - internal anatomy of lamprey fish - digestive system - respiratory system.	2L+3P
3	Chapter 3: Scientific classification - above the row of jaws - row of cartilaginous fishes - classification of cartilaginous fishes - general characteristics of cartilaginous fish (shark, dogfish, ray) - phenotype of fish dog - skin - digestive system - respiratory system - male genitourinary system - female urogenital system To dog fish.	2L+3P
4	Chapter 4: Skeletal system in cartilaginous fish (dogfish sharks). Chapter 5: Circulatory system in cartilaginous fish (fish dog shark and petromyzon) - the arterial system - the venous system.	2L+3P
5	Chapter 6: Scientific classification - description of bony fish - classification of bony fish - irradiated finned fish - general characteristics of bony fish (Tilapia) - skin - sources of color in fish.	2L+3P
6	Chapter 7: Bony fish (tilapia) - modern classification of tilapia fish - external shape of tilapia fish - anatomical structure of tilapia fish - digestive system - respiratory system - genitourinary system - muscular system - movement in fish.	2L+3P

7	Chapter 8: Fish farming - A brief history of fish farming - The development of fish farming - Cultivation of fish with ducks - Growing fish with geese - Growing fish in paddy fields - The most important elements that may be used in dividing fish farming systems - Types of fish farming - Methods of fish farming	2L+3P
8	Chapter 9: Fish culture - Limited Fish culture System - Integrated Fish culture System - Pond culture - Cage culture - Canals culture - culture in the Sea.	2L+3P
9	Chapter 10: Fish farm water quality - the most important physical water properties (turbidity - temperature - light) - the most important chemical water properties (Oxygen - Nitrogenous compounds such as Ammonia, Nitrite and Nitrate - Carbon dioxide - pH – Salinity).)	2L+3P
10	Chapter 11: Reproduction in fish - Reproduction systems in fish - Reproductive cycles in fish - Effect of environmental factors on reproductive cycles - Physiological events leading to fish reproduction - Fish reproduction under agricultural breeding conditions (natural hatching, artificial hatching) - Induced spawning - Hatching and incubating eggs and larvae of tilapia Even marketing.	2L+3P
Total		30L+30P

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding:		
1.1	Differentiate various fish groups based on their characters of external shape and food habitat.	Lectures Open discussion	Written exams
1.2			
2.0	Skills:		
2.1	Analyze different scientific facts related to water quality and their most important physical and chemical properties.	Lectures Lab activities	Written exams Practical reports
2.2	Anatomy of different fish, study of internal organs.	Small group activities Interactive learning	Assignments
3.0	Values:		
3.1	Examination of food and microorganisms content of stomach and digestive tract, and analyzed microscopically.	Small group activities Lab activities	Assignments Practical exam
3.2	Discussion about hatching and incubating eggs and larvae of fish (tilapia) even their marketing.	Lectures Lab activities	Written exams Practical reports

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Assignments and activities:		

#	Assessment task*	Week Due	Percentage of Total Assessment Score
	1- Written Assignment 2- Power-point presentation	Variable	10
2	Midterm Exam	5 th	20
3	Periodic Exam	7 th	10
4	Practical Reports	Continuous	15
5	Final Practical Exam	11 th	5
6	Final Exam	12 th	40

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

6 hours per week for academic advice and consultations

Teaching staff is also available using Blackboard web site and Taif University “Edugate” System

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<p>- عبد الباري محمد محمود (٢٠٠٧م). تفريخ الأسماك والقشريات في المياه العذبة. منشأة المعارف. الطبعة الأولى.</p> <p>Peter W. Perschbacher and Robert R. Stickney (2017): Tilapia in Intensive Co-culture., Wiley-Blackwell; 1st edition (368) 1st Edition.</p>
Essential References Materials	John S. Lucas, Paul C. Southgate and Craig S. Tucker (2019): Aquaculture: Farming Aquatic Animals and Plants., Wiley-Blackwell; 3rd edition (664 p).
Electronic Materials	Universities on Websites in concern with Ichthyology courses Journals of Aquaculture.
Other Learning Materials	PPT-files and movies for teaching fish aquaculture, reproduction and hatching. CD on Dev. Bio Laboratory: Fish hatching.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Classrooms for 40 students\lecture. - Laboratory for 20 students\ lab activity.
Technology Resources (AV, data show, Smart Board, software, etc.)	Laptop- data show
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	Light microscopes -Permanent slides Incubators- Fine chemicals like hormones for artificial spawning

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students	Indirect
Quality of learning resources	Program committee Staff members Students	Indirect
Extent of achieving the course learning outcomes	Staff members Students	Direct Indirect

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Biology Department
Reference No.	Committee number no. 14 - Academic Year 1442-1443H
Date	22 May 2022G – 23 Showal 1443H

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