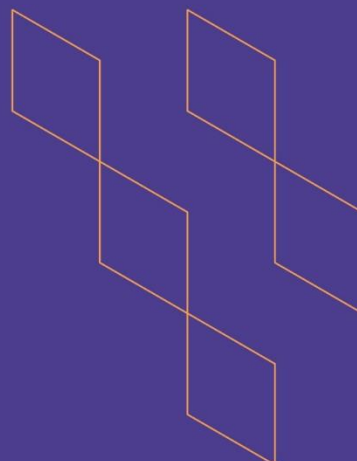




T-104
2022

Course Specification



Course Title: Fundamentals of Aquaculture
Course Code: APAC1601
Program: Aquaculture Technology
Department:
College: Applied College
Institution: Umm Al-Qura University
Version: 2
Last Revision Date: December 2024



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A. General information about the course:

Course Identification

1. Credit hours: 3 hours

2. Course type

a. University ☐ College ☐ Department ☒ Track ☐ Others ☐

b. Required ☒ Elective ☐

3. Level/year at which this course is offered:

1st Semester

4. Course general Description

This course introduces the basics of aquaculture as industry in theory and practice. It discusses the economic importance of aquaculture species and production worldwide. Furthermore, it introduces the desired species to be cultured. It explains the morphology and physiology of fish and shrimp. It lists the concepts of biochemistry and water chemistry. Students are introduced to the basics of animal husbandry. Finally, this course describes the importance of water quality and pond dynamics.

5. Pre-requirements for this course (if any):

None

6. Co- requirements for this course (if any):

None

7. Course Main Objective(s)

- ❖ Obtain a general picture and attain awareness of the aquaculture business and its significance.
- ❖ Be aware of the biology of the species used in aquaculture.
- ❖ Be aware of the economically important species used in aquaculture.
- ❖ Be aware of the aquaculture situation in the global setting.
- ❖ Understand the contribution of aquaculture in the global economy.
- ❖ Gain insight on what it is like working in this type of industry.
- ❖ Be introduced to the issues and challenges that faces aquaculture industry.
- ❖ Understand the common animal husbandry techniques.
- ❖ Outline basic problems encountered in aquaculture.

1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
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No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom		90%
2.	E-learning		10%

2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45 h
2.	Laboratory/Studio	
3.	Field	
	Total	45 h

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Define Aquaculture.	K1	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
1.2	List of Factors in the Development of Aquaculture.	K2	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
1.3	List the species desired to be cultured	K4	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
1.4	Describe the basic concepts on anatomy and morphology of fish and shrimp species.	K3	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
				-Assignments -Final exam
1.5	Recognize the common animal husbandry techniques.	K4	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
1.6	Outline basic problems encountered in aquaculture.	K5	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
2.0	Skills			
2.1	Develop oral presentation	S1	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
2.2	Communicating personal ideas and thoughts	S2	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
2.3	Demonstrate assertiveness of decision	S3	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam
3.0	Values, autonomy, and responsibility			
3.1	Work independently and as part of a team	V1	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam



Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.2	Demonstrate responsibilities and accountability	V2	-Lectures -Discussions -Presentations	-Oral presentations -Quizzes -Assignments -Final exam

C. Course Content

No	List of Topics	Contact Hours
1.	What is Aquaculture? Definition and Terminology • Overview • Factors in the Development of Aquaculture • Objectives of Aquaculture • sustainability: resource management, long-term industry viability, and best practices in sustainable farming techniques.	6
2.	Brief History and Chronology of Aquaculture development Theories on the Beginnings of Aquaculture • Milestones in the Development of Aquaculture • Chronology of the Development of Finfish and Shrimp Farming • Introduce Integrated multi-trophic aquaculture (IMTA)	3
3.	Fish, Shrimp: Morphology and Physiology Integumentary system, Respiratory system, circulation system, digestive system, excretory system, reproductive system, immune and nervous systems. Mollusk and aquatic Plant biology.	12
4.	World Aquaculture Production World Production from Inland Aquaculture and Mariculture • Major Producing Countries • Proportion of Total Global Aquaculture Production • Major Aquaculture Products • Major Markets for Aquaculture Products	9
5.	Basics of Animal Husbandry Stages of husbandry, Aspects of husbandry	6
6.	Understanding Water Quality and Pond Dynamics Important water quality parameters for aquacultures,	6

	Relationship between water quality parameters, basic pond dynamics, basic problem-solving for water quality	
7.	Common Issues and Challenges in Aquaculture Climate change resilience, security and logistics.	3
Total		45

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Participation		10%
2.	Periodical Exam(s)	3	10%
3.	Reflection and Reports	5	10%
4.	Mid Term Exam	7	20%
5.	Final Exam	16	50%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)



E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	<ul style="list-style-type: none"> – Stickney, Robert R., and Delbert M. Gatlin III: Aquaculture: An introductory text. Cabi, 2022. 4th Edition. ISBN: 9781800621121 – Lucas JS, Southgate PC (2019) Aquacultures: Farming Aquatic Animals and Plants. Wiley Blackwell. ISBN: 978-1119230861 – Burton D, Burton M. (2017) Essential Fish Biology: Diversity, Structure and Function. Oxford University Press. ISBN: 978-0198785569
Supportive References	
Electronic Materials	
Other Learning Materials	Multi- media associated with the textbook and the relevant websites

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
Technology equipment (projector, smart board, software)	Projectors
Other equipment (depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect: regular



Assessment Areas/Issues	Assessor	Assessment Methods
		surveys to evaluate teaching effectiveness and course relevance Direct: CLO's assessment
Effectiveness of student's assessment	Peer review	Direct: Annual review of course content by faculty members and external experts
Quality of learning resources	Students	Indirect: regular surveys to evaluate quality of learning resources
The extent to which CLOs have been achieved	Peer review	Direct: Annual review of course content by faculty members and external experts
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data

COUNCIL /COMMITTEE	Umm Al-Qura University Council
REFERENCE NO.	851141114462/190390
DATE	446/11/22

