Course Specification
(Bachelor)

Course Title:	**Marine Biology**
Course Code:	**BIOL 317**
Program:	**Bachelors of Science (B.Sc.,) Biology**
Department:	**Biology**
College:	**College of Science, Al Zulfi**
Institution:	**Majmaah University**
Version:	**# 4th**
Last Revision Date:	**Ref# 4; 29/12/2023**

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: 3 (2+1)

Equivalent to ECTS credit points:4.5

2. Course type

A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		

3. Level/year at which this course is offered: (6th level / 3rd year)

4. Course General Description:

Marine environment is the largest aquatic system on the earth. This supports 50% of the primary production of the earth, 85% of the global fish catch and more than 50% of the world's populations to live in the coastal areas. This course deals with marine environment divisions, the life in the Ocean (Plankton, Nekton and Benthos), Symbiotic relationships between marine organisms, marine environmental biology: physical factors that affect marine organisms - (temperature, light, salinity, pressure, ocean currents, tides, waves, substratum, climate change) and chemical factors affecting marine organisms - (O2, CO2 ,(pH), inorganic salts, dissolved ,pelagic oceans, benthic oceans, and hydrothermal vents Through this course, the students can able to understand the importance of marine biology.

5. Pre-requirements for this course (if any)**: BIOL 112 Invertebrates; BIOL 213 Vertebrates**

BIOL 112 Invertebrates; BIOL 213 Vertebrates

6. Co-requisites for this course (if any)**: Nil**

N/A

7. Course Main Objective(s):

- **The student will be able to classify marine organisms according to the characteristics and features that distinguish each class.**
- **This course focuses on studying the sections of the marine environment and the types of life in the sea (plankton, swimmers, and benthic organisms), explaining the distinctive characteristics of each category of organisms.**
- **The main objective of this course is to understand the marine plant/animal communities and their environmental adaptations**

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	**60**	**83%**
2	E-learning	**12**	**17%**
3	Hybrid		

No	Mode of Instruction	Contact Hours	Percentage
	• Traditional classroom • E-learning		
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	30
2.	**Laboratory/Studio**	30
3.	**Field**	0
4.	**Tutorial**	0
5.	**Others (specify)**	0
Total Contact Hours		60

Workload (based on the academic semester)

No	Activity	Workload (in hours
1.	**Contact Hours**	60
2.	**Self – study hours or Academic learning hours (Assignments, Quizzes, reports, Discussions, Library, research …….)**	60
	Total Workload	120 **hours**
	Equivalent to ECTS credit points	4.5

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1				
1.2	**Describe the relationship between species and their internal (physiological) and external environments.**	**K2**	**Lectures, individual and group discussion and videos**	**Quizzes, Midterm and final exams**

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
2.0	Skills			
2.1	Explain Correlate between various ecosystems and living organisms	S1	Lectures, individual and group discussion oral presentation and videos.	Quizzes, Midterm and final exams
2.4	Examine the Specimens of marine organisms .	S4	Lectures, videos, Hands on practical trainings.	Practical exams Lab report
3.0	Values, autonomy, and responsibility			
3.2	Prepare the scientific research and presentation about any tasks related to marine biology.	V2	Lectures, videos, Homework, Research	-Research work -Written participations. -Oral question

C. Course Content

No	List of Topics	Contact Hours
1.	**Unit:1 Exploring the seas and oceans** Introductory study on: • What is Oceanography? • Worlds Ocean and Basins, Formation of ocean water • Physical Oceanography • Marine Species diversity • Significance and Importance of Oceans • Ocean water properties and composition • Surface salinity and affecting factors • Difference between Sea and Gulf • Life in the Ocean • Marine Ecosystems • Estuaries • Coral Reefs and threats to the corals • Polar Ecosystem and threats to the polar • Instruments for Marine Navigation • Waves and Tides and their action	4

2.	**Unit:2 Physical Properties of Ocean** • Distribution of Water on Earth • Nature and Qualities of pure water; Sea water • Dissolved components in seawater and their cycle • pH, Bicarbonate buffering of sea water • Humidity, Measurement of Salinity, • Variability of Ocean salinity • Relationship of Salinity; Density; and Temperature • Formation of sea Ice • The Cline Curves • Gases dissolved in seawater	4
3.	**Unit:3 Marine Environments** • Division of the Marine Environment • Benthic Zones • Bathyal and Abyssal zone • Hadal Zone • Sandy coasts • Rocky Coasts • Estuaries and Its classification (Coastal plains, Fjords, Bar-Built and Tectonic) • Coastal and Oceanic landforms **Estuary Communities** Salt Marsh Community Mud Flat community Mangrove swamps community • The coral reef • Hydrothermal vents • Mid Ocean Ridge • Black Smokers	4
4.	**Unit: 4 Plankton and Plankton communities** • Define: Planktons and Types of Planktons • Nectons, • Classification of Planktons based on size • Distribution of Phytoplankton's and significance and threats to planktons • Distribution, Types and importance of Zooplanktons	4
5.	**Unit: 5 Interdependence in Ocean** • Water cycle • Nutrient cycle (Carbon; Phosphorus; Nitrogen) • Ecosphere cycle	4

	• How the succession occurs in marine Environment • Ocean food chain and Food web • Symbiotic Relationship (Mutualism; Parasitism; Commensalism and Mimicry)	
6.	**Unit: 6, Marine Plants** Algae and seaweeds Green Algae Red Algae Marine Angiosperms Sea grasses and Reproduction Salt Marsh Halophytes and their adaptations Mangroves, Habitats and Its Reproduction Kelp forests, Threats and Restoration Uses of Marine Plants	4
7.	**Unit: 7, Marine invertebrates** Marine Invertebrates classification and Diversity and feeding mechanism 1) Phylum – Porifera 2) Phylum – Coelenterata (Cnidaria) 3) Phylum – Ctenophora 4) Phylum – Platyhelminthes 5) Phylum – Aschelminthes (Nemotoda) Annelida 6) Phylum – Arthropoda 7) Phylum – Mollusca 8) Phylum – Echinodermata 9) Phylum – Hemichordata **10)** Phylum – Chordata (Why Chordata included in invertebrates-Justification with typical example)	4
8.	**Unit: 8, Marine Vertebrates** Marine vertebrates' classification, Diversity, and feeding mechanism, special characteristics and threats to the animals. • Fishes • Amphibians • Reptiles • Birds Mammals	2
9.	**Practical:** **Spotters:** Green algae; Red algae; Brown algae; Marine invertebrates;	30

	Vertebrates (Eg: Sharks, Stingray); Marine Mammals: Identification and Classification of spotters with its distinct adaptive features. **Analysis:** Determination of pH in marine water Determination of pH in brackish water Determination of pH in fresh water Determination of Total dissolved salt in marine water Determination of Total dissolved salt in brackish water Determination of Total dissolved salt in fresh water Comparative analysis and significance of salinity in presence of marine water	

Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Quiz's, Assignments, Homework	Once every 2 weeks	10%
2.	Mid-term Exam-1	5th week	10%
3.	Mid-term Exam-2	9th week	10%
4.	Black Board, e-Exam	12th week	10%
5.	Practical Exam and Viva-voce	15th week	20%
6.	Final Exam	18th week	40%
...			

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

E. Learning Resources and Facilities

Learning Resources and Facilities

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1. References and Learning Resources

Essential References

سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	م الكتاب المقرر Textbook title
٢٠١٤	Scientific Publisher	Kathiresan Kandasamy	Ocean and Coastal Ecology
سنة النشر **Publishing Year**	**اسم الناشر** **Publisher**	**اسم المؤلف (رئيسي)** **Author's Name**	**اسم المرجع** **Reference**
٢٠٠٥	Pearson	James W. Nybakkan and Mark D. Bertness	Marine Biology: An Ecological Approach (6th Edition
٢٠16 1284090507 978-1284090505	Jones & Bartlett Learning; 11th edition	**John Morrissey** **James L. Sumich** Deanna R. Pinkard-Meier	Introduction to the Biology of Marine Life
٢٠16 128409054X 978-1284090543	Jones & Bartlett Learning	**Virginia L. Cass-Dudley** **Gordon Dudley** James L. Sumich	Laboratory and Field Investigations in Marine Life

Supportive References

Recommended Reading

- Cottrell, S., *The Study Skills Handbook*, 3rd ed., Macmillan, 2008.
- Fry, R., *How to Study*, 6th ed., Delmar Learning, 2005.
- Race, P., *How to Get a Good Degree – Making the most of your time at* university, 2nd ed., Open University Press, 2007.

Further Sources

- Baker, E., Barrett, M., and Roberts, L., *Working communication.* Milton, 2002.
- Berko, R. M., Wolvin, A. D., and Wolvin, D. R., *Communicating: A social and career focus*, Boston, 8th ed., 2001.
- Blundel, R., *Effective organisational communication: Perspectives, principles and practices*, Essex, 2nd ed., 2004.
- Daly, J. A., and Engleberg, I. N., *Presentations in everyday life: Strategies for effective speaking*, Boston, 2001.
- O'Rouke, J. S. (2004). *Management communication: A case-analysis approach*, New Jersey, 2nd ed., 2004.
- Whalen, D. J., *I see what you mean*, Chicago, 1995.

Electronic Materials

- https://www2.estrellamountain.edu/faculty/farabee/biobk/BioBookPaleo3.html
- Plant life: http://lifeofplant.blogspot.com/2011/03/marine-plants.html
- https://quizlet.com/278945407/marine-bio-chapter-6-marine-plants-diagram/
- https://www.bangor.ac.uk/oceansciences/undergraduate-modules/OSX-1002
- https://docs.google.com/presentation/d/1iZ8zvpdOn1kLH1YIBRM1xIwmap_mW-dPBa1aSeXpW3A/embed?hl=en&size=m&slide=id.p163
- https://quizlet.com/211473227/marine-biology-practical-flash-cards/
- https://manoa.hawaii.edu/exploringourfluidearth/biological/invertebrates

	/worms-phyla-platyhelmintes-nematoda-and-annelida
Other Learning Materials	**Journals (general reading)** ➢ Asian Journal of Communication ➢ Communication Education Journal of Communication

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	**Existing facilities are satisfactory** (Classrooms and other facilities).
Technology equipment (projector, smart board, software)	**Existing facilities are satisfactory** (smart board and e-podium are available**)**
Other equipment (depending on the nature of the specialty)	Nil

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Direct assessment
Effectiveness of Students assessment	Program Leader	Direct assessment
Quality of learning resources	Students	Indirect assessment
The extent to which CLOs have been achieved	Faculty	Direct supervision
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**Biology Department Council**
REFERENCE NO.	**# 7**
DATE	**04/ 04/ 1446H __ 07/10/2024**