جامعة البحرين
University of Bahrain
مركز ضمان الجودة والاعتماد الأكاديمي
Quality Assurance and Accreditation Center

Academic Course Specification Form

استمارة توصيف المقرر الأكاديمي

القسم الخاص بالطالب
Section Concerning the Student

1. Course Code:	BIOLS 429	**1. رمز المقرر:**
2. Course Title	Marine and Fresh water Botany	**2. اسم المقرر:**
3. College:	Science	**3. الكلية:**
4. Department:	Biology	**4. القسم:**
5. Academic Program:	Bachelor of Science in Biology	**5. البرنامج الأكاديمي:**
6. Course Credits:	2-2-3	**6. عدد الساعات المعتمدة:**
7. Course NQF Level:	8	**7. مستوى المقرر وفقا للإطار الوطني للمؤهلات:**
8. Notional Hours:	126	**8. عدد الساعات الافتراضية:**
9. NQF Credits:	13	**9. عدد الساعات المعتمدة للمقرر وفقا للإطار الوطني للمؤهلات:**
10. Prerequisite:	BIOLS 320	**10. المتطلب السابق للمقرر:**
11. Lectures Timing & Location:		**11. وقت المحاضرة ومكانها:**
12. General Mode of Teaching and Learning	Traditional تقليدي	**12. النمط العام للتعليم والتعلّم:**

13. Course Coordinator:		**13. منسّق المقرر:**
14. Course Instructor:		**14. مدرّس المقرر:**
15. Office Hours and Location:		**15. الساعات المكتبية ومكانها:**
16. Instructor's Email:		**16. البريد الإلكتروني لمدرّس المقرر:**
17. Academic Year:		**17. السنة الأكاديمية:**
18. Semester:		**18. الفصل الدراسي:**

19. Textbook(s):	**19. الكتب الدراسية للمقرر:**

Pereira, L., & Magalhães Neto, J. (Eds.). (2023). *Marine Algae: Biodiversity, Taxonomy, Environmental Assessment, and Biotechnology*. Academic Press.

Wehr, J. D., & Sheath, R. G. (Eds.). (2022). *Freshwater Algae of North America: Ecology and Classification*. Academic Press

20. References:	**20. المراجع:**

Hurd, C. L., Westermeier, H. V., & Clayton, M. N. (2021). *Seaweed Ecology and Physiology*. Cambridge University Press.)
Bellinger, E. G., & Sigee, D. C. (2020). *Freshwater Algae: Identification, Enumeration and Use as Bioindicators*. John Wiley & Sons.

21. Other Learning Resources Used (e.g. e-learning, field visits, periodicals, software, etc.):	**21. مصادر التعلّم الأخرى (مثال: التعلّم الإلكتروني، زيارات ميدانية، دوريات، برمجيات، إلخ....)**

1. Online Databases and Journals:
    - Access resources like AlgaeBase for taxonomic information on algae and Aquatic Botany journal for scholarly articles on marine and freshwater plant ecology.
2. Botanical Gardens and Aquaria:
    - Visit botanical gardens and public aquaria specializing in aquatic plants to observe and study diverse species in controlled environments.
3. Professional Organizations:
    - Join organizations such as the Phycological Society of America and the International Society for the Study of Algae for access to conferences, publications, and networking opportunities.
4. Field Guides and Identification Keys:
    - Utilize field guides and online resources with identification keys specific to marine and freshwater algae and aquatic plants for practical field and lab exercises.
5. Aquatic Ecology Courses and Workshops:

- Enroll in courses and workshops offered by universities and research institutions focusing on aquatic ecology, algae biology, and freshwater plant communities.

6. Research Institutions and Websites:
   - Explore websites of research institutions and governmental agencies specializing in marine and freshwater ecosystems, offering publications, data sets, and research reports.
7. Online Webinars and Seminars:
   - Attend webinars and seminars hosted by universities and organizations on topics such as algal blooms, aquatic plant physiology, and ecosystem management.
8. Citizen Science Projects:
   - Participate in citizen science initiatives related to water quality monitoring, algae blooms, and conservation efforts, contributing to real-world research and data collection.
9. Digital Tools and Apps:
   - Use digital tools and apps for plant identification, ecological modeling, and data visualization in aquatic environments (e.g., iNaturalist, PlantNet).
10. Aquatic Ecology Textbooks:
    - Refer to comprehensive textbooks on aquatic ecology and marine botany that cover topics such as ecological interactions, biodiversity, and conservation strategies.

22. Course Description (as published in the College Catalogue):	**22. توصيف المقرر (حسب ما ورد في دليل الكلية):**
The biology and diversity of algal protests; the evolution and phylogeny of protests; distribution and ecology of aquatic plants; aquatic environments and global ecology; the commercial utilization of marine algal ecology.	

23. Course Intended Learning Outcomes (3 to 5 CILOs):	**23. مخرجات التعلّم للمقرر (CILOs) (3 إلى 5 مخرجات تعلّمية):**
1. Analyze the biology and diversity of algal protests, emphasizing their morphological characteristics, life cycles, and ecological roles in marine and freshwater ecosystems.	
2. Examine the evolution and phylogeny of protests, exploring their genetic diversity and evolutionary adaptations to aquatic environments.	
3. Evaluate the distribution patterns and ecological interactions of aquatic plants.	
4. Investigate the global ecological significance of aquatic environments, focusing on the roles of marine and freshwater plants in nutrient cycling, carbon sequestration, and ecosystem stability.	
5. Assess the commercial utilization of marine algae, studying their economic importance in industries such as pharmaceuticals, food production, and biotechnology.	

24. Course Assessment Percentages (as per Regulations of Study and Examination at the University of Bahrain):		**24. أساليب التقييم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):**	
Assessment **التقييم**	**Type** **النوع**	**Percentage** **النسبة**	**Assessment Date** **تاريخ التقييم**

Quizzes	Individual فردي	10 %	
Examinations	Individual فردي	30 %	
Laboratory Exams	Individual فردي	20 %	
Final Examination		40 %	
Total	**100%**		

25. Description of Topics Covered	**25. وصف الموضوعات التي ينبغي تناولها:**
Topic Title ***(e.g. chapter/experiment title)*** **الموضوع**	***Description*** **التفصيل**
Chapter 1	Introduction to Marine and Freshwater Botany
Chapter 2	Biology and Diversity of Algal Protests
Chapter 3	Evolution and Phylogeny of Aquatic Plants
Chapter 4	Distribution Patterns of Aquatic Plant
Chapter 5	Ecology of Phytobenthos and Phytoplankton
Chapter 6	Succession in Aquatic Plant Communities
Chapter 7	Energy Flow in Aquatic Ecosystems
Chapter 8	Eutrophication and Pollution in Water Bodies
Chapter 9	Commercial Utilization of Marine Algae
Chapter 10	Conservation and Management of Aquatic Plant Resources
Chapter 11	Case Studies in Marine and Freshwater Botany
Chapter 12	Research Methods in Aquatic Plant Ecology
Lab 1	**Microscopic Examination of Algal Diversity** Use microscopy to observe and identify various algae species from marine and freshwater environments. Compare and contrast their cellular structures and morphological features.

Lab 2	**Field Trip: Collection and Identification of Aquatic Plants** Conduct a field trip to a local pond, lake, or coastal area. Collect samples of aquatic plants and algae, and use identification keys and field guides to classify and document species diversity.
Lab 3	**Water Quality Assessment Using Bioindicators** Analyze water samples collected from different aquatic ecosystems. Use algae and aquatic plants as bioindicators to assess water quality based on species diversity, abundance, and health.
Lab 4	**Algal Culturing and Growth Experiments** Set up algal cultures in controlled laboratory conditions. Monitor growth rates, biomass production, and responses to varying nutrient concentrations and environmental factors.
Lab 5	**Study of Photosynthetic Responses in Aquatic Plants** Investigate photosynthetic adaptations of marine and freshwater plants. Measure photosynthetic rates under different light intensities, temperatures, and CO2 concentrations using chlorophyll fluorescence techniques.
Lab 6	**Investigation of Algal Pigments and Photosynthesis** Extract and analyze pigments from algae and aquatic plants. Use spectrophotometry to quantify chlorophyll a, b, and accessory pigments, correlating pigment content with light availability and ecological roles.
Lab 7	**Experimental Assessment of Algal Growth and Nutrient Limitation** Design experiments to study the effects of nutrient limitation (e.g., nitrogen, phosphorus) on algal growth. Measure biomass production and nutrient uptake rates to understand nutrient dynamics in aquatic ecosystems.

Lab 8	**Study of Algal Blooms and Factors Influencing Bloom Formation** Simulate conditions conducive to algal blooms in controlled environments. Investigate factors such as nutrient loading, temperature, and light availability that contribute to bloom formation and dynamics.
Lab 9	**Effects of Pollution on Aquatic Plant Communities** Expose aquatic plants and algae to pollutants (e.g., heavy metals, pesticides) in laboratory setups. Assess physiological responses, growth inhibition, and bioaccumulation of pollutants in different plant species
Lab 10	**Field Monitoring of Aquatic Plant Communities** Set up long-term monitoring plots in aquatic habitats. Periodically sample and analyze changes in species composition, biomass, and community structure of aquatic plants and algae over time.

26. Weekly Schedule **26. الجدول الأسبوعي**

Week الأسبوع	Date التاريخ	Topics Covered الموضوعات المتناولة	CILOs مخرجات التعلُم للمقرر (CILOs)	Teaching/Assessment Mode and Method منهجية ونمط التدريس/التقييم
1		*Chapter 1* *lab 1*	*1*	Traditional تقليدي *Short reading texts* *Video demonstration* Self-*assessment during class time*
2		*Chapter 2* *Lab 2*	*1, 5*	Traditional تقليدي
3		*Chapter 3* *Lab 3*	*2, 5*	Traditional تقليدي
4		*Chapter 4* *Lab 4*	*2, 5*	Traditional تقليدي
5		*Chapter 5* *Lab 5*	*2*	Traditional تقليدي
6		*Chapter 6* *Lab test 1*	*2, 5*	Traditional تقليدي
7		***Mid Semester Break***	*2*	Traditional تقليدي
8		*Chapter 7* *Lab 6*	*2*	Traditional تقليدي

9		*Chapter 7* *Lab 7*	*3, 5*	Traditional تقليدي
10		*Chapter 8* *Lab 8*	*3, 5*	Traditional تقليدي
11		*Chapter 8* *Lab 7*	*3, 5*	Traditional تقليدي
12		*Chapter 9* *Lab 8*	*3,5*	Traditional تقليدي
13		*Chapter 10* *Lab 9*	*3,5*	Traditional تقليدي
14		*Chapter 11* *Lab 10*	*3, 5*	Traditional تقليدي
15		*Chapter 12* *Lab Test 2*	*4,5*	Traditional تقليدي
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27. Academic Integrity Statement	**27. بيان النزاهة الأكاديمية**
Students are to observe the highest level of honesty and academic ethics in pursuit of their academic goals as per UOB Regulations of Student Conduct and Academic Integrity, Anti-plagiarism Policies, and Students' Rights and Responsibilities Handbook. The consequences for cheating, plagiarism, unauthorized collaboration, and other forms of academic dishonesty can be very serious and will be dealt with as per the aforementioned policies and regulations.	يتعيّن على الطلبة الالتزام بأعلى مستويات الصدق والأمانة والأخلاق الأكاديمية في سعيهم لتحقيق أهدافهم الأكاديمية وفقًا للوائح سلوك الطلاب والنزاهة الأكاديمية، سياسات مكافحة الانتحال، ودليل حقوق الطلبة وواجباتهم، المعمول بها في جامعة البحرين. يمكن لعواقب الغش والسرقة الأدبية والتعاون غير المصرح به وغيرها من أشكال عدم الأمانة الأكاديمية أن تكون خطيرة للغاية وسيتم التعامل معها وفقًا للسياسات واللوائح المذكورة آنفا.
28. Attendance and Absence Regulations	**28. نظام الحضور والغياب**
Students are required to adhere to regular attendance for class lectures and practical sessions, as determined by the nature of the course, as per Article (33) of Regulations of Study and Examination at the University of Bahrain.	يجب على الطلبة الالتزام بالحضور المنتظم للمحاضرات الصفية والعملية، حسبما تحدده طبيعة المقرر الدراسي، ووفقا للمادة (33) من نظام الدراسة والامتحانات في جامعة البحرين.