



Academic Course Specification Form

استمارة توصيف المقرر الأكاديمي

القسم الخاص بالطالب Section Concerning the Student

1. Course Code:	BIOLS 390	1. رمز المقرر:
2. Course Title	Research Methods	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:	7	7. مستوى المقرر وفقاً للإطار الوطني للمؤهلات:
8. Notional Hours:	126	8. عدد الساعات الافتراضية:
9. NQF Credits:	13	9. عدد الساعات المعتمدة للمقرر وفقاً للإطار الوطني للمؤهلات:
10. European Credit Transfer System (ECTS) credits	6.5	10. عدد الساعات للمقرر بالنظام الأوروبي
11. Prerequisite:	ENGL 226 & STAT 272	11. المتطلب السابق للمقرر:
12. Lectures Timing & Location:		12. وقت المحاضرة ومكانها:

13. General Mode of Teaching and Learning	Traditional تقليدي	13. النمط العام للتعليم والتعلم:
14. Course Coordinator:		14. منسق المقرر:
15. Course Instructor:		15. مدرّس المقرر:
16. Office Hours and Location:		16. الساعات المكتبية ومكانها:
17. Instructor's Email:		17. البريد الإلكتروني لمدرّس المقرر:
18. Academic Year:		18. السنة الأكاديمية:
19. Semester:		19. الفصل الدراسي:
20. Textbook(s):	20. الكتب الدراسية للمقرر:	
A Step-by-Step Introduction to Research Methods: Qualitative, Quantitative, Mixed-Methods, Applied, by Bunnie Loree Claxton, Robert K. Mott, 2023. Research Methodology for Biological science Paperback – July 1, 2021 by N Gurumani		
21. References:	21. المراجع:	
Research Methodology in the Medical and Biological Sciences 1st Edition by Petter Laake (Editor), Haakon Breien Benestad (Editor), Bjorn R. Olsen (Editor), 2007		
22. Other Learning Resources Used (e.g. e-learning, field visits, periodicals, software, etc.):	22. مصادر التعلم الأخرى (مثال: التعلم الإلكتروني، زيارات ميدانية، دوريات، برمجيات، إلخ....)	
23. Course Description (as published in the College Catalogue):	23. توصيف المقرر (حسب ما ورد في دليل الكلية):	
Definition and purpose of research, Types of research (qualitative, quantitative, mixed-methods, Experimental design, Descriptive research, Case studies) Searching and reviewing academic articles, Systematic review, Developing research hypotheses, Operational definitions, sampling (random and cluster), Non-probability sampling, Surveys and questionnaires, Interviews (structured, semi-structured, unstructured), Observational methods, Focus groups, Informed consent, Confidentiality and privacy, Avoiding bias and plagiarism, Structure of research papers (introduction, methodology, results, discussion), and citations		
24. Course Intended Learning Outcomes (3 to 5 CILOs):	24. مخرجات التعلم للمقرر (CILOs) (3 إلى 5 مخرجات تعليمية):	
1. Explain the fundamental principles and ethics of scientific methods and their application in biological research.		

2. Execute scientific investigations using appropriate research designs and methodologies tailored to specific biological research questions.			
3. Apply statistical tools to analyze biological data, interpret results accurately, and draw meaningful conclusions.			
4. Evaluate appropriate research methodologies to address specific types of biological research problems.			
5. Utilize research-based skills, such as critical thinking, teamwork, and effective communication, in future research projects.			
25. Course Assessment Percentages (as per Regulations of Study and Examination at the University of Bahrain):		25. أساليب التقييم ونسبها المئوية (بحسب نظام الدراسة والامتحانات في جامعة البحرين):	
Assessment التقييم	Type النوع	Percentage النسبة	Assessment Date تاريخ التقييم
Midterm I	Individual فردي	15%	
Midterm II	Individual فردي	15%	
Lab Exam	Individual فردي	20%	
Final Exam	Individual فردي	40%	
Lab reports	Individual	5%	
Quiz/ Viva	Individual	5%	
Total	100%		
26. Description of Topics Covered		26. وصف الموضوعات التي ينبغي تناولها:	
Topic Title (e.g. chapter/experiment title) الموضوع		Description التفصيل	
Introduction to Research Methods		Definition and Purpose of Research Types of Research: Qualitative and Quantitative Research Process Overview Scientific Methods and Principles Ethical Considerations in Research	
Formulating Research Questions and Hypotheses		Importance of Research Questions in Scientific Inquiry Characteristics of a Good Research Question Developing Hypotheses from Research Questions Types of Hypotheses: Null and Alternative Operationalizing Variables for Research	
Literature Review and Theoretical Frameworks		Purpose and Importance of a Literature Review Searching and Selecting Relevant Literature Synthesizing and Analyzing Existing Research Developing a Theoretical Framework Linking Literature Review to Research Questions and Hypotheses	

Research Ethics and Integrity	Fundamental Ethical Principles in Research Informed Consent and Participant Rights Confidentiality and Data Protection Avoiding Plagiarism and Falsification of Data Ethical Approval and Institutional Review Boards (IRBs)
Designing Research: Qualitative and Quantitative Approaches	Overview of Qualitative and Quantitative Research Designs Choosing the Appropriate Research Design Qualitative Research Methods: Case Studies, Interviews, and Focus Groups Quantitative Research Methods: Surveys, Experiments, and Observations Mixed-Methods Approach: Integrating Qualitative and Quantitative Designs
Sampling Methods and Data Collection Techniques	Types of Sampling: Probability and Non-Probability Sampling Sampling Techniques: Random, Stratified, and Cluster Sampling Sample Size Determination and Its Importance Data Collection Methods: Surveys, Interviews, and Observations Tools and Instruments for Data Collection: Questionnaires, Tests, and Scales
Statistical Analysis and Data Interpretation	Introduction to Descriptive and Inferential Statistics Choosing the Appropriate Statistical Tests Data Visualization: Graphs, Charts, and Tables Interpreting Statistical Results and Significance Common Errors in Data Analysis and Interpretation
Experimental Design and Control Methods	Principles of Experimental Design: Control, Randomization, and Replication Types of Experimental Designs: Between-Subjects, Within-Subjects, and Mixed Designs Variables in Experimentation: Independent, Dependent, and Control Variables Randomization and Counterbalancing in Experimental Research Minimizing Bias and Ensuring Validity in Experimental Studies

Writing and Presenting Research Findings			Structuring a Research Paper: Abstract, Introduction, Methodology, Results, and Discussion Effective Data Presentation: Tables, Figures, and Graphs Writing Style and Clarity in Scientific Writing Citing Sources and Referencing Styles (APA, MLA, Chicago, etc.) Preparing and Delivering Oral Presentations and Posters	
Critical Thinking and Problem Solving in Research			The Role of Critical Thinking in Scientific Inquiry identifying and Defining Research Problems Evaluating Research Methods and Results Critically Formulating Solutions and Hypotheses Based on Evidence Overcoming Research Challenges and Limitations through Problem-Solving	
27. Weekly Schedule			27. الجدول الأسبوعي	
Week الأسبوع	Date التاريخ	Topics Covered الموضوعات المتناولة	CILOs مخرجات التعلم المقرر (CILOs)	Teaching/Assessment Mode and Method منهجية ونمط التدريس/التقييم
1		Definition and Purpose of Research Types of Research: Qualitative and Quantitative Research Process Overview Scientific Methods and Principles Ethical Considerations in Research NO LAB	1, 2 and 3	تقليدي Traditional
2		Importance of Research Questions in Scientific Inquiry Characteristics of a Good Research Question Developing Hypotheses from Research Questions Types of Hypotheses: Null and Alternative Operationalizing Variables for Research	1, 2, 3	تقليدي Traditional
3		Purpose and Importance of a Literature Review	1, 2, 3	تقليدي Traditional

		Searching and Selecting Relevant Literature Synthesizing and Analyzing Existing Research Developing a Theoretical Framework Linking Literature Review to Research Questions and Hypotheses		
4		Fundamental Ethical Principles in Research Informed Consent and Participant Rights Confidentiality and Data Protection Avoiding Plagiarism and Falsification of Data Ethical Approval and Institutional Review Boards (IRBs)	1-5	Traditional تقليدي
5		Overview of Qualitative and Quantitative Research Designs Choosing the Appropriate Research Design	1-5	Traditional تقليدي
6		Qualitative Research Methods: Case Studies, Interviews, and Focus Groups Quantitative Research Methods: Surveys, Experiments, and Observations Mixed-Methods Approach: Integrating Qualitative and Quantitative Designs	1-5	Traditional تقليدي
7		Types of Sampling: Probability and Non-Probability Sampling Sampling Techniques: Random, Stratified, and Cluster Sampling Sample Size Determination and Its Importance Data Collection Methods: Surveys,	1-5	Traditional تقليدي

		Interviews, and Observations Tools and Instruments for Data Collection: Questionnaires, Tests, and Scales		
8		Introduction to Descriptive and Inferential Statistics Choosing the Appropriate Statistical Tests Data Visualization: Graphs, Charts, and Tables Interpreting Statistical Results and Significance Common Errors in Data Analysis and Interpretation	1-5	Traditional تقليدي
9		Principles of Experimental Design: Control, Randomization, and Replication Types of Experimental Designs: Between-Subjects, Within-Subjects, and Mixed Designs Variables in Experimentation: Independent, Dependent, and Control Variables Randomization and Counterbalancing in Experimental Research Minimizing Bias and Ensuring Validity in Experimental Studies	1-5	Traditional تقليدي
10		Structuring a Research Paper: Abstract, Introduction, Methodology, Results, and Discussion	1-5	Traditional تقليدي
11		Effective Data Presentation: Tables, Figures, and Graphs Writing Style and Clarity in Scientific Writing	1-5	Traditional تقليدي

		Citing Sources and Referencing Styles (APA, MLA, Chicago, etc.) Preparing and Delivering Oral Presentations and Posters		
12		The Role of Critical Thinking in Scientific Inquiry identifying and Defining Research Problems Evaluating Research Methods and Results Critically	1-5	تقليدي Traditional
13		Formulating Solutions and Hypotheses Based on Evidence Overcoming Research Challenges and Limitations through Problem-Solvinganatomy	1-5	تقليدي Traditional
14		Formulating Solutions and Hypotheses Based on Evidence Overcoming Research Challenges and Limitations through Problem-Solvingan	1-5	Traditional
15		Formulating Solutions and Hypotheses Based on Evidence Overcoming Research Challenges and Limitations through Problem-Solvingan	1-5	Traditional
16				
28. Academic Integrity Statement			28. 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.			يتعين على الطلبة الالتزام بأعلى مستويات الصدق والأمانة والأخلاق الأكاديمية في سعيهم لتحقيق أهدافهم الأكاديمية وفقاً للوائح سلوك الطلاب والنزاهة الأكاديمية، سياسات مكافحة الانتحال ، و دليل 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 وفقاً للسياسات واللوائح المذكورة آنفاً.	

29. Attendance and Absence Regulations	29. 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، ووفقاً للمادة (33) من نظام الدراسة والامتحانات في جامعة البحرين.