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 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 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:	ENGL 226 & STAT 272	**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:**
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**	
20. References:	**20. المراجع:**
Research Methodology in the Medical and Biological Sciences 1st Edition by Petter Laake (Editor), Haakon Breien Benestad (Editor), Bjorn R. Olsen (Editor), 2007	
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....)**
22. Course Description (as published in the College Catalogue):	**22. 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	
23. Course Intended Learning Outcomes (3 to 5 CILOs):	**23. مخرجات التعلّم للمقرر (CILOs) (3 إلى 5 مخرجات تعلّمية):**
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.

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**
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%**		

25. Description of Topics Covered	**25. 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

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		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*	Traditional تقليدي Insert teaching methods

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	Traditional تقليدي
3		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	1, 2, 3	Traditional تقليدي
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, Interviews, and Observations Tools and Instruments for Data Collection: Questionnaires, Tests, and Scales	1-5	Traditional تقليدي
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,	1-5	Traditional تقليدي

		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		
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 Citing Sources and Referencing Styles (APA, MLA, Chicago, etc.) Preparing and Delivering Oral Presentations and Posters	1-5	Traditional تقليدي
12		The Role of Critical Thinking in Scientific Inquiry identifying and Defining Research Problems Evaluating Research Methods and Results Critically	1-5	Traditional تقليدي

13		Formulating Solutions and Hypotheses Based on Evidence Overcoming Research Challenges and Limitations through Problem-Solvinganatomy	1-5	Traditional تقليدي
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				

27.	**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.