MODULE DESCRIPTION FORM
نموذج وصف المادة الدراسية

Module Information					
Module Title	**Methodology of Scientific Research**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**NTU 400**				
ECTS Credits	**4**				
SWL (hr/sem)	**100**				
Module Level		**4**	**Semester of Deliver**		**7**
Administering Department		**PM**	**College**	**TEMO**	
Module Leader	**Haitham M. Wadullah**		**e-mail**	**Dr.haitham@ntu.edu.iq**	
Module Leader's Acad. Title		**Professor**	**Module Leader's Qualification**		**Ph.D.**
Module Tutor	**Tariq Al-Khalidi (اسم المرشد)**		**e-mail**		
Peer Reviewer Name		**Name**	**e-mail**	**E-mail**	
Scientific Committee Approval Date		**01/6/2023**	**Version Number**	**1.0**	

Relation with other Modules			
Prerequisite module	**None**	**Semester**	
Co-requisites module	**None**	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents	
Module Objectives	1. To Understand the significance of scientific research and its role in advancing knowledge. 2. To Identify the key characteristics of scientific research. 3. This course deals with the basic concept of Formulate research questions and objectives. 4. This is the basic subject for all ethical considerations in scientific research 5. Recognize the importance of conducting a literature review in research. 6. Familiarize with quantitative and qualitative data collection methods. 7. Understand the principles of experimental design.
Module Learning Outcomes	1. Understand the nature and significance of scientific research. Identify the characteristics and principles of scientific research. Demonstrate an awareness of ethical considerations in scientific research. 2. Recognize between various research designs. 3. List the various Formulate clear research questions and objectives 4. Summarize what is literature review to identify relevant research articles. 5. Discuss and evaluate the credibility and relevance of research articles. 6. Design experiments that maximize internal and external validity. 7. Determine the appropriate sample size for a survey based on research objectives. 8. Demonstrate proficiency in employing different approaches to qualitative research. 9. Recognize and apply ethical principles and guidelines in research involving human subjects 10. Communicate research results in a clear and concise manner to different audiences. 11. Formulate a clear and concise research problem statement.
Indicative Contents	Indicative content includes the following. Part A - Definition and significance of scientific research [5 hrs.] Part B- Research Problem Formulation [5 hrs.] Part C- Research Design and Methodology [5 hrs.] Part D- Literature Review [5 hrs.] Part E- Data Collection and Measurement [5 hrs.] Part F- Homework and Discussion [7 hrs.]

Learning and Teaching Strategies	
Strategies	Studying the Methodology of Scientific Research requires a combination of active learning strategies and focused study techniques, such as; **Read the Course Materials, Engage in Discussions, Take Detailed Notes, Practice with Examples, Review and Summarize, Create Visual Aids, and Work on Exercises and Assignments**

Student Workload (SWL)			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	**32**	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	**(32/15)= 2**
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	**68**	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	**(68/15)= 5**
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**100**		

Module Evaluation					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	**2**	**10% (10)**	**5 and 10**	**LO #1, #2 and#9 #10, #11**
	Assignments	**2**	**10% (10)**	**2 and 12**	**LO #3, #4 and #6, #7**
	Projects / Lab.	**1**	**10% (10)**	**Continuous**	**All**
	Report	**1**	**10% (10)**	**13**	**LO #5,#8**
Summative assessment	**Midterm Exam**	**2hr.**	**10% (10)**	**7**	**LO #1 - #7**
	Final Exam	**2hr.**	**50% (50)**	**16**	**All**
Total assessment			**100% (100 Marks)**		

Delivery Plan (Weekly Syllabus)	
	Material Covered
Week 1	Introduction to Scientific Research
Week 2	Research Design
Week 3	Literature Review
Week 4	Data Collection Methods
Week 5	Data Analysis
Week 6	Experimental Design
Week 7	Survey Design and Sampling
Week 8	Qualitative Research Methods
Week 9	Ethics in Scientific Research
Week 10	Data Interpretation and Presentation
Week 11	Peer Review and Publication Process
Week 12	Research Proposal Writing
Week 13	Project Management and Time Planning
Week 14	Presentations and Research Conferences
Week 15	Research Ethics Review and Course Wrap-up
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)	
	Material Covered
Week 1	**No**

Learning and Teaching Resources		
	Text	**Available in the Library?**
Required Texts	1. "Research Design: Qualitative, Quantitative, and Mixed Methods Approaches" by John W. Creswell and J. David Creswell 2. "The Craft of Research" by Wayne C. Booth, Gregory G. Colomb, and Joseph M. Williams 3. "Research Methodology: A Step-by-Step Guide for Beginners" by Ranjit Kumar	**Yes**
Recommended Texts	Academic Databases: Utilize academic databases such as PubMed, Google Scholar, JSTOR, and IEEE Xplore to search for research papers in the methodology of scientific research. Use relevant keywords such as "research methodology," "scientific research design," or specific methodologies you are interested in (e.g., "qualitative research methods," "experimental design").	**No**
Websites	**(www.socialresearchmethods.net)** **(www.researchmethodology.org)** **(www.qualres.org)**	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

Module 1

Code	Course/Module Title	ECTS	Semester
NTU 400	**Methodology of Scientific Research**	**4**	**7**
Class (hr/w)	**Lect/Lab./Prac./Tutor**	**SSWL (hr/sem)**	**USWL (hr/sem)**
2	**0**	**32**	**68**

Description

The description for the Methodology of Scientific Research is:

The Methodology of Scientific Research refers to the systematic and rigorous approach employed in conducting scientific investigations and acquiring knowledge. It encompasses the principles, techniques, and procedures used to design, implement, and analyze scientific studies. This field of study focuses on the various methods and tools employed in gathering and interpreting data, ensuring the reliability and validity of research findings. Methodology of Scientific Research involves making informed decisions regarding research design, selecting appropriate data collection methods, and applying statistical techniques for data analysis. It also includes ethical considerations in research, such as protecting participants' rights and ensuring research integrity. A solid understanding of the Methodology of Scientific Research is essential for researchers and scientists to generate credible and reliable results, contribute to the advancement of knowledge, and address complex research questions in diverse disciplines.