



Course Syllabus

1	Course title	Scientific Medical Research
2	Course number	0505308
3	Credit hours	3 credit hours (2 hours of theory and 1 hour of practical group work)
	Contact hours (theory, practical)	50 hours
4	Prerequisites/corequisites	None
5	Program title	Doctor of Medicine
6	Program code	---
7	Awarding institution	The University of Jordan
8	School	School of Medicine
9	Department	Family and Community Medicine
10	Course level	Third year of medical studies
11	Academic year and semester	2026/2027 / First semester
12	Other departments involved in teaching the course	NA
13	Main teaching language	English
14	Delivery method	☐ Face-to-face learning Fully onlinex
15	Online platforms	** Moodle ** Microsoft Teams ☐ Skype xx Zoom ☐ Others.....E-learning
16	Issuing/Revision Date	October 2026

17 Course Coordinator:

Dr Munir Abu-Helalah



Name: Dr. Munir Abu-Helalah
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 Consultations: Available by appointment
 Office hours: Monday and Wednesday, 12:00 noon–1:00 p.m.

18 Other instructors:

19 Course Description:

This course provides students with the essential knowledge and skills required to conduct quantitative medical research, from identifying a research problem to writing a research paper. It covers the purpose and planning of quantitative medical research, including research questions, hypotheses, study design, inclusion and exclusion criteria, primary and secondary outcomes, data-collection tools, fieldwork, sample size, sampling techniques, analysis plans and research ethics. Students will develop skills in grant applications and project budgeting. The course also addresses literature reviews, measurement tools, experimental design, statistical analysis techniques, data processing, research reporting, and the critical appraisal of proposals and publications. The course also introduces the qualitative research paradigm and its current and potential applications in medical sciences. It explores the philosophical assumptions underlying qualitative research and approaches such as grounded theory, phenomenology, ethnography, action research and narrative inquiry.

During the course, students are expected to participate in fieldwork in different areas of Jordan to collect and analyse data, produce results and write a research report. The first semester covers quantitative research; qualitative research will be covered in the second semester.

Practical component: Students will be divided into 40 groups of 12 students. Each group will submit a survey study report. Group representatives will undertake data collection, after which all group members will collaborate on data analysis and preparation of a manuscript draft.

A- Course Aims and Outcomes 20

:Aims

The course aims to introduce students to quantitative research concepts, methods and processes. It enables students to recognise the importance of research to their careers as the basis for evidence-based medicine and clinical judgement.

Intended Learning Outcomes (ILOs)

B. Student Learning Outcomes (SLOs)

Upon successful completion of this course, students will be able to:

	PLO (1)	PLO (2)	PLO (3)	PLO (4)	PLO (5)
PLOs					
SLOs of the course					
1. Understand key concepts related to quantitative research	*	*	*	*	*
2. Write a manuscript draft	*	*	*	*	*
3. Work within a research team	*	*	*	*	*
4. Understand the purpose of conducting research	*	*	*	*	*
5. Recognise sources of research problems	*	*	*	*	*
6. Recognise a researchable problem	*	*	*	*	*
7. Begin to develop a research problem	*	*	*	*	*
8. Understand how to develop a hypothesis, research question or objective.	*	*	*	*	*
9. Understand the importance of the literature review	*	*	*	*	*
10. Identify appropriate sources for a literature review	*	*	*	*	*
11. Identify quantitative research designs	*	*	*	*	*
12. Develop study questionnaires and chart review forms	*	*	*	*	*
13. Write methodology sections for different study designs.	*	*	*	*	*
14. Differentiate between quantitative and qualitative research	*	*	*	*	*
15. Understand the components of a valid study design and methods to reduce the risk of bias	*	*	*	*	*
16. Understand sampling techniques and plan a probability sampling strategy	*	*	*	*	*
17. Explain validity and reliability in quantitative research. Understand institutional review board (IRB) approval requirements, including preparation of consent forms and patient information leaflets.	*	*	*	*	*
18. Write manuscript sections: abstract, introduction, methods, results, discussion and recommendations.	*	*	*	*	*

19. Critically appraise proposals, published manuscripts and reports.	*			*	

Program Learning Outcomes (PLOs):

1. Apply an evidence-based approach to medical practice, understand and respect the roles of other healthcare professionals, and apply the principles of multidisciplinary teamwork dynamics and collaboration.
2. Apply scientific research methods to medical practice, including problem identification, data collection and hypothesis formulation; use inductive reasoning to solve problems; and ensure that clinical reasoning and decision-making are guided by sound ethical principles.
3. Demonstrate knowledge of scientific research methods and the ethical principles of clinical research.
4. Develop the skills needed to conduct research and work within a research team.
5. Demonstrate the professional skills needed for lifelong learning, including the ability to identify personal strengths and weaknesses, address areas for improvement, assess knowledge and performance, and develop a self-improvement plan.

21. Topic Outline and Schedule:

Scientific Medical Research Lecture Timetable / First Semester (2026/2027) Start date: 11 October 2026

Semester weeks		Topic	Lecture title	Recorded lectures on the e-learning platform week	Activities (Asynchronous) (Done by every Sunday Before class)
1		Course overview The health research process	Introduction to medical research	11 October 2026	Interactive video
1	Step 1: Identifying a Study Question	Selecting a research question <i>Selecting a general topic</i>		11 October 2026	Interactive video and links to educational materials on literature reviews using reliable data sources
1		Reviewing the literature		11 October 2026	Interactive video and group work
1		Defining specific aims <i>Focusing the research question</i>		11 October 2026	Interactive video and group work
1		Professional development <i>Collaborating</i>		11 October 2026	Interactive video and group work
1		Co-authoring		11 October 2026	Interactive video and group work
					Interactive video and group work
2	Step 2: Selecting a Study Approach	<i>Introduction to study design</i>	<i>Introduction to study design</i>	18 October 2026	Interactive video and group work
2		Surveys	Surveys	18 October 2026	Interactive video and group work
3		Development of questionnaires and chart review forms	Questionnaire Design part 1	25 October 2026	Interactive video and group work
3		Collecting quantitative data	Questionnaire design, Part 2	25 October 2026	Interactive video and group work
3		Outcome assessment, validity and reliability		25 October 2026	Interactive video and group work
4		Sampling techniques	Sampling techniques	01 November 2026	Interactive video and group work

Semester weeks		Topic	Lecture title	Recorded lectures on the e-learning platform week	Activities (Asynchronous) (Done by every Sunday Before class)
4		Sample size and power This is already covered in the statistics course	Sample size and power This is already covered in the statistics course	01 November 2026	Interactive video and group work
5		Overview of study designs <i>Prospective and retrospective studies</i>	Overview of study designs	08 November 2026	Interactive video and group work
5		Case report, case series, and ecological studies	Observational studies, Part 1 (case reports, case series and ecological studies)	08 November 2026	Interactive video and group work
5		Cross-sectional studies	Observational studies part 1 (Cross-sectional studies)	08 November 2026	Interactive video and group work
6		Case-control studies	Case-control studies	15 November 2026	Interactive video and group work
6		Cohort studies	Bias and confounding	15 November 2026	Interactive video and group work
6		Bias and confounding		15 November 2026	Interactive video and group work
7	Step 3: Designing the Study and Collecting Data	Experimental studies	Experimental studies	22 November 2026	Interactive video and group work
7		Systematic reviews and meta-analyses	Systematic reviews and meta-analyses	22 November 2026	Interactive video and group work
8		Ethical considerations	Ethical considerations	29 November 2026	Interactive video and group work
8		Ethical review and approval	Ethical review and approval	29 November 2026	Interactive video and group work
9		Research proposal and protocols for different study designs	Research proposal and protocols for different study designs	06 December 2026	Interactive video and group work

Semester weeks		Topic	Lecture title	Recorded lectures on the e-learning platform week	Activities (Asynchronous) (Done by every Sunday Before class)
	Step 4: Analyzing Data	This topic is covered in the second-year statistics course and will not be included in this course.	This topic is covered in the second-year statistics course and will not be included in this course.	06 December 2026	Interactive video and group work
10	Step 5: Reporting findings	Group work: proposals, questionnaires and chart review forms	Group work: proposals, questionnaires and chart review forms	13 December 2026	Interactive video and group work
11		Discussion, recommendations, and abstract preparation	Discussion, recommendations, and abstract preparation	20 December 2026	Interactive video and group work
11		Article structure, posters and presentations	Presentation of research materials	27 December 2026	Interactive video and group work
12	Step 6: Critical appraisal and final presentations	Principles of critical appraisal Critical appraisal tools for different study designs	Principles of critical appraisal of scientific research	03 January 2027	Interactive video and group work
13	Revision		Revision	10 January 2027	
14		Examination on the quantitative component: date to be announced		TBD	

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face-to-face/Blended /Fully online)	Platform	Synchronous / Asynchronous lectures	Evaluation Methods	Resources
1	1.1	Course overview The health research process Selecting a research question		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	1.2	<i>Selecting a general topic</i> Reviewing the literature Defining specific aims and objectives		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	1.3	Co-authoring		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
2	2.1	<i>Introduction to study design</i>		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	2.2	Surveys		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
3	3.1	Development of questionnaires and chart review forms		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face-to-face/Blended /Fully online)	Platform	Synchronous / Asynchronous lectures	Evaluation Methods	Resources
	3.2	Collecting quantitative data		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	3.3	Outcome assessment, validity and reliability		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
4	4.1	Sampling techniques		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	4.2	Sample size and power		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
		Overview of study designs		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
5	5.1	Case report, case series, and ecological studies		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	5.2	Cross-sectional studies		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
							Exam and project report	Interactive video and slides

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face-to-face/Blended /Fully online)	Platform	Synchronous / Asynchronous lectures	Evaluation Methods	Resources
6	6.1	Case-control studies		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	6.2	Cohort studies		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	6.3	Bias and confounding			E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
7	7.1	Experimental studies		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	7.2	Systematic reviews and meta-analyses		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	7.3	Experimental studies		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
8	8.1	Ethical considerations		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	8.2	Ethical review and approval		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face-to-face/Blended /Fully online)	Platform	Synchronous / Asynchronous lectures	Evaluation Methods	Resources
	8.3			Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
9	9.1	Research proposal and protocols for different study designs		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	9.2	Statistical analysis		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	9.3	Research proposal and protocols for different study designs		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
10	10.1	Group work: proposals, questionnaires and chart review forms		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
11	11.1	Discussion, recommendations, and abstract preparation		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	11.2	Article structure, posters and presentations		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face-to-face/Blended /Fully online)	Platform	Synchronous / Asynchronous lectures	Evaluation Methods	Resources
	11.3	Discussion, recommendations, and abstract preparation		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
12	12.1	Principles of critical appraisal		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	12.2	Critical appraisal tools for different study designs		Online	E-learning	Asynchronous lectures	Exam and project report	Interactive video and slides
	12.3							
13	13.1	Group presentations		Face-to-face				
	13.2							
	13.3							
14	14.1							
	14.2							
	14.3							
15	15.1							
	15.2							
	15.3							

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
Midterm Exam	40	Topics from weeks 1–13	All SLOs	During the first-semester final examination period	On campus
Course activities	10	Group work	All SLOs	Group work deadline: 15 January 2027	On campus

23 Course Requirements

For online learning, students should have a computer and an internet connection.

24 Course Policies:

Attendance policy:

Attendance is expected. Interactive videos will include questions, and students' responses will be used to record attendance. Missing more than three class sessions, with or without an excuse, will affect the attendance component, which accounts for 10% of the course grade. Refer to the university's absence policies.

Examination absences and timely submission of assignments:

Students who are unable to take a scheduled examination must notify the instructor within three days and arrange a make-up examination. Make-up examinations will be offered only to students who have notified the instructor and agreed on an alternative time. An examination missed without an approved make-up arrangement will receive a grade of zero.

Academic integrity and conduct:

Cheating, plagiarism and misconduct will not be tolerated and will be addressed in accordance with University of Jordan policies.

Grading policy:



The course grade will be based primarily on the midterm examination, class participation and attendance, and an on-campus, closed-book, multiple-choice final examination. The final examination will cover the required readings, classroom discussions and lectures.

University support services:

University services are available to support students' achievement in the course.

25 References:

A- Required books, assigned readings and audiovisual materials:

- PowerPoint presentations will be posted on the e-learning platform.
- Selected supplementary websites and articles will be posted on the e-learning platform. Students are responsible for completing all supplementary readings. These materials will be discussed in class and included in assessments.

B. Recommended books, materials and media:

- Bhopal R. Concepts of Epidemiology. New York. Oxford University Press. 2004.
- Wald N. The Epidemiological Approach. Fourth Edition. London. Royal Society of Medicine Press.
- Bowling A. Research Methods in Health. Second edition. Berkshire. Open University Press. 2002
- Crombie I. Research in Health Care. Chichester. John Wiley & Sons. 1997.
- Jacobsen, Kathryn H. (2017) Introduction to Health Research Methods: A Practical Guide, 2nd edition. Publisher: Jones & Bartlett Learning.
- Forister, J. Glenn & Blessing, J. Dennis (2016) Introduction to Research and Medical Literature for Health Professionals, Fourth Edition. Jones & Bartlett Learning.
- Polit, D.F., & Beck, C.T. (2018). *Nursing research: Generating and assessing evidence for nursing practice* (10th ed.). Philadelphia, PA: Lippincott Williams & Wilkins.
- Portney & Watkins (2013) Foundations of Clinical Research: Pearson New International Edition: Applications to Practice, 3/E. Pearson publisher.

26 Additional information:



مركز الاعتماد
وإضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

Name of Course Coordinator: Dr. Sireen Alkhaldi

Signature:

Date:

October 2026

Head of Curriculum Committee/Department: Dr. Sireen Alkhaldi -----

Signature: -----

Head of Department: ----- Signature: -----

Head of Curriculum Committee/Faculty: ----- Signature: ---

Dean: ----- Signature: -----