Course Syllabus

1	**Course title**	Scientific Medical Research	
2	**Course number**	0505308	
3	**Credit hours**	3 credit hours (2 hours theory and 1 hour 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**	3rd medical year	
11	**Year of study and semester (s)**	2023/2024 / First semester	
12	**Other departments (s) involved in teaching the course**	NA	
13	**Main teaching language**	English	
14	**Delivery method**	☐Face to face learning x**Fully online**	
15	**Online platforms(s)**	** **Moodle** ** Microsoft Teams ☐Skype xx Zoom ☐Others……E-learning	
16	**Issuing/Revision Date**	October 2023	

17 Course Coordinator:

18 Other instructors:

مركز الاعتماد وضمان الجودة

Name: Dr. Munir Abu-Helalah
Office number: ……..Dept. Family & Community Medicine
Phone number: -----
Email: m.abu-helalah@ju.edu.jo
Contact hours: Available by appointment
Office Hours: Monday and Wednesday 12noon-1pm

19 Course Description:

This course is designed to provide the students with the essential knowledge and skills of quantitative medical research including the identification of the problem to writing the research paper. This course will deal with thepurpose of quantitative medical research, planning of the quantitative medical research (research problem, hypothesis writing, research plan, methodology including design, inclusion and exclusion criteria, primary and secondy outcomes, tools, field work, sample size and analysis plan, sampling technique) and ethics in quantitative medical research). It will provide students with skills for grant applications and writing project budget. It also covers reviewing the literature, sampling and measurement tools, experimental design, , statistical analysis techniques, data processing and preparing the research report. Finally it will cover critical appraisal of proposals and publications.
Also, the course provides a comprehensive introduction to qualitative paradigm and its current and potential application in medical sciences. The philosophical assumptions behind this kind of research, assumptions underlying various qualitative schools of inquiry (e.g., grounded theory, phenomenology, ethnography, actionresearch, and narrative).
During the course, students are expected to be engaged in actual field work in different areas of Jordan for thepurpose of collecting data, producing results, analysing them and writing the research report.
The First semester will only address the quantitative part, Qualitative part will be during the 2nd semester.

Practical material: students were split into 40 groups; each group consists of 12 students. Each group will submit a report of a survey study. Students will participate in the data collection. Representatives of each group will conduct this task. Then, each group will work together on data analysis and write a manuscript draft.


مركز الاعتماد
وضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

A- **20 Course aims and outcomes:** Aims:

The course aims to introduce students to quantitative research concepts, methods and process. It allows studentsto recognise the significance of research to their career as it provides the basis for evidence based medicine and clinical judgement.

Intended Learning Outcomes (ILOs): Upon successful completion of this course students should be able to

B- Students Learning Outcomes (SLOs):

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

PLOs / SLOs of the course	PLO (1)	PLO (2)	PLO (3)	PLO (4)	PLO (5)
1. Understand key concepts related to quantitative research	*	*	*	*	*
2. Able to write a manuscript draft	*	*	*	*	*
3. Able to work within a research team	*	*	*	*	*
4. Understand the purpose of conducting research	*	*	*	*	*
5. Recognize sources for research problems	*	*	*	*	*
6. Recognize 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. Ability to develop study questionnaire and chart review forms	*	*	*	*	*
13. Obtain skills to write methodology section for different study designs.	*	*	*	*	*
14. Differentiate between quantitative and qualitative research	*	*	*	*	*
15. Understand components of valid study design and reduce risk of bias	*	*	*	*	*
16. Understand types of sampling techniques and ability to plan a probability sampling technique	*	*	*	*	*
17. Explain what is validity and reliability in quantitative research.Understand concepts of IRB approvals including writing a consent forms and patient information leaflet.	*	*	*	*	*
18. Skills needed to write an manuscript: abstract,	*	*	*	*	*

introduction, methods, results, discussion, recommendations. 19. Ability to critical appraise proposals and published manuscripts and reports.	*			*	

Program Learning Outcomes (PLOs):

1. Apply an evidence-based approach to medical practice, understand and respect other healthcare professional roles, and apply the principles of multidisciplinary teamwork dynamics and collaboration.
2. Apply scientific research methods to the medicine practice including problem identification, data collection, hypothesis formulation, etc., and apply inductive reasoning to problem-solving and ensure that clinical reasoning and decision-making are guided by sound ethical principles.
3. Demonstrate knowledge of scientific research methods and ethical principles of clinical research
4. To assist students to become researchers and work within research team
5. Demonstrate professionally the skills needed for lifelong learning including the ability to identify and address personal strengths and weaknessess, self-assess knowledge and performance, and develop a self-improvement plan.

مركز الاعتماد وضمان الجودة
ACCREDITATION & QUALITY ASSURANCE CENTER

21. Topic Outline and Schedule:

Scientific Medical Research Lecture timetable / First semester (2023/ 2024):

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	8-10-2023	Interactive video
1	Step 1: Identifying a Study Question	Selecting a research question *Selecting a general topic*		8-10-2023	Interactive video, link to educational material in literature review using valid data sources
1		Reviewing the literature		8-10-2023	Interactive video and group work
1		Defining specific aims *Focusing the research question*		8-10-2023	Interactive video and group work
1		Professional development *Collaborating*		8-10-2023	Interactive video and group work
1		Co-authoring		8-10-2023	Interactive video and group work
					Interactive video and group work
2	Step 2: Selecting aStudy Approach	*Introduction to study design*	*Introduction to study design*	*15-10-2023*	Interactive video and group work
2		Surveys	Surveys	*15-10-2023*	Interactive video and group work
3		Questionnaire and chart review form development	Questionnaire Design part 1	*22-10-2023*	Interactive video and group work
3		Collecting quantitative data	Questionnaire design part 2	*22-10-2023*	Interactive video and group work
3		Outcomes assessment, validity and reliability		*22-10-2023*	Interactive video and group work
4		sampling technique	sampling technique	*29-10-2023*	Interactive video and group work
4		Sample size and power This is already covered in the statistics course	Sample size and power This is already covered in the	*29-10-2023*	Interactive video and group work

			statistics course		
5		Overview of study designs *Prospective and retrospective studies*	Overview of study designs	05-11-2023	Interactive video and group work
5		Case report, case series, and ecological studies	Observational studies part 1(Case report, case series, and ecological studies)	05-11-2023	Interactive video and group work
5		Cross-sectional studies	Observational studies part 1(Cross-sectional studies)	05-11-2023	Interactive video and group work
6		case-control studies	Cohort studies	12-11-2023	Interactive video and group work
6		Cohort studies	case-control studies	12-11-2023	Interactive video and group work
6		Bias and confounding		12-11-2023	Interactive video and group work
7	Step 3: Designing the Study and Collecting Data	Experimental studies	Experimental studies	19-11-2023	Interactive video and group work
7		Systematic Reviews & meta-analyses	Systematic Reviews & meta-analyses	19-11-2023	Interactive video and group work
8		Ethical considerations	Ethical considerations	26-11-2023	Interactive video and group work
8		Ethical review and approval	Ethical review and approval	26-11-2023	Interactive video and group work
9		Research proposal and protocols for different study designs	Research proposal and protocols for different study designs	03-12-2023	Interactive video and group work
	Step 4: Analyzing Data	This is already covered in the statistics course(2nd year), it won't be included in our course.	This is already covered in the statistics course(2nd year), it won't be included in our course.	03-12-2023	Interactive video and group work
10	Step 5: Reporting findings	Group work proposals, questionnaires and chart review form	Group work proposals, questionnaires and chart review form	10-12-2023	Interactive video and group work

11		Discussion, recommendations, and abstract preparation	Discussion, recommendations, and abstract preparation	17-12-2023	Interactive video and group work
11		Article structure, Posters and presentations	Research material presentation	24-12-2023	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	31-12-203	Interactive video and group work
13		Group presentations	Group presentations	07-01-2023	
14		Exam: Quantitative part to be announced		TBD	

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	Course overview The health research process Selecting a research question		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	1.2	*Selecting a general topic* Reviewing the literature Defining specific aims and objectives		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	1.3	Co-authoring		Online	E-learning	**Asynchronous Lecturing**	Exam and	Interactive video and slides

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
							project report	
2	2.1	*Introduction to study design*		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	2.2	Surveys		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
3	3.1	Questionnaire and chart review form development		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	3.2	Collecting quantitative data		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	3.3	Outcomes assessment, validity and reliability		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
4	4.1	sampling technique		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	4.2	Sample size and power		Online	E-learning	**Asynchronous Lecturing**	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 Lecturing	Evaluation Methods	Resources
		Overview of study designs		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
5	5.1	Case report, case series, and ecological studies		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	5.2	Cross-sectional studies		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
							Exam and project report	Interactive video and slides
6	6.1	case-control studies		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	6.2	Cohort studies		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	6.3	Bias and confounding			E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
7	7.1	Experimental studies		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	7.2	Systematic Reviews & meta-analyses		Online	E-learning	**Asynchronous Lecturing**	Exam and	Interactive video and slides

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
							project report	
	7.3	Experimental studies		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
8	8.1	Ethical considerations		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	8.2	Ethical review and approval		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	8.3			Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
9	9.1	Research proposal and protocols for different study designs		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	9.2	Statistical analysis		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	9.3	Research proposal and protocols for different study designs		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
10	10.1	Group work proposals, questionnaires		Online	E-learning	**Asynchronous Lecturing**	Exam and	Interactive video and slides

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
		and chart review form					project report	
11	11.1	Discussion, recommendations, and abstract preparation		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	11.2	Article structure, Posters and presentations		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	11.3	Discussion, recommendations, and abstract preparation		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
12	12.1	Principles of critical appraisal		Online	E-learning	**Asynchronous Lecturing**	Exam and project report	Interactive video and slides
	12.2	Critical appraisal tools for different study designs		Online	E-learning	**Asynchronous Lecturing**	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							

Week	Lecture	Topic	Student Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
	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 of weeks 1-13	All SLO's	During first term final period	In-campus
Activities material	10	Groups work	All SLO's	Deadline for the group work 15 January	In-campus

23 Course Requirements

Virtual course: students should have a computer and internet connection.

24 Course Policies:

Attendance policies:

Attendance is expected. Interactive videos will contain questions, responding to these questions will be used as a label for attendance. Students who miss more than three class sessions with or without excuse will be accounted from the 10% attendance grade. (See the university policies regarding absence).

Absences from exams and submitting assignments on time:

Students unable to take a scheduled exam are expected to inform the instructor within 3 days and arrange for a make-up one. Make ups will be given only to students who have notified the instructor and set up an alternate time. Any missed exam will result in a grade of zero for that particular examination type.

Honesty policy regarding cheating, plagiarism, misbehavior:

Cheating and plagiarism is not tolerated and will be dealt with according to the policies of the of Jordan.

Grading policy:

The student's course grade will be primarily determined by a combination of midterm examination, class participation and attendance, in school, closed book, multiple choice style final examination. The final examination will incorporate principles and materials from the required readings and from classroom discussions and lectures

Available university services that support achievement in the course: all services are available.

25 References:

A- Required book(s), assigned reading and audio-visuals:

- PowerPoint presentations will be posted on the E-learning.
- Selected supplemental websites and articles (blended) will be posted on the E-learning. You are responsible for all supplemental readings. Supplemental material will be discussed in class and included in tests.

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 forHealth Professionals, Fourth Edition. Jones & Bartlett Learning.
- Polit, D.F., & Beck, C.T. (2018). *Nursing research: Generating and assessing evidence for nursingpractice* (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:

Name of Course Coordinator: Dr. Munir Abu-Helalah Signature: Date: 10/ 2023
Head of Curriculum Committee/Department: Dr. Sireen Alkhaldi ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ---
Dean: ---------- Signature: ----------