Course Specification
Student Version

Course Title:	Research Methodology and Evidence-Based Healthcare
Course Code:	RME 407
Department:	Basic Medical Sciences
Program:	Bachelor of Medicine and Surgery
College:	Vision College in Riyadh
Institution:	Vision College in Riyadh
Revised:	June 2025

A. Course Identification

1. Credit hours: 4 (2+1+1)
2. Level/year at which this course is offered: Level 7/Year 4
3. Pre-requisites for this course (if any): ECM 306
4. Co-requisites for this course (if any): None

B. Teaching Methods

1	Lecture
2	Practical Sessions
3	Seminar and CBT

C. Course Description and Main objective

1. Course Description

- The main purpose of this course is to provide an introduction to the basis and principles of research methodology. Various research designs will be introduced that include experimental and non-experimental as well as qualitative and quantitative designs. The course also aims at stressing the importance and needs for research in health practice. It prepares students to plan and carry out research projects during their studies in the college of medicine and in their future career.
- The course also gives the student basic information & understanding of data collection, biostatistics and basic scientific research writing. Students will learn data collection techniques, develop a basic vocabulary of biostatistics terms, and recognize the usefulness and limitation of biostatistics. They will also be introduced to concepts and techniques needed to describe, and analyze medical data; develop basic scientific writing skills and ability to use computer software to conduct possible calculations and graphs.

- The advanced part of the course is designed to help students understand the fundamental concepts of evidence-based healthcare (EBHC), including clinical epidemiology and begin acquiring the skills of critically reading the medical literature and literature searching. The course fits integrally with research methodology where the principles learned are applied in reading and evaluating the literature.

2. Course Main Objective

The main purpose of this course is to provide the students with an introduction to the basis and principles of research methodology to help them carry out research projects during their studies in the college of medicine and in their future career.

3. Course Objectives

By the end of this course, students should be able to:

- Define health research.
- Discuss the importance of health research and its applications.
- Define and describe the Knowledge Management Cycle.
- Explain current terminology relative to theoretical and conceptual frameworks.
- Evaluate the identifying characteristics of theoretical and conceptual frameworks.
- Analyze various frameworks currently in use in healthcare practice and research.

- Explore emerging complexity and linear and nonlinear frameworks for generalizability in healthcare applications.
- Discuss the use of a particular theoretical framework for application in healthcare.
- Identify different methods and instruments to collecting the data from scientific database.
- Define Reference Citation
- Define Responsible Conduct of Research
- Explain he main forms of scientific misconduct.
- Define RMS
- Explain why researchers need RMS.
- List the criteria of choosing RMS.
- Import references from the internet to PC/Laptop
- Building references databases
- Define literature review.
- Explain aim of literature review
- Describe of good characteristics of literature review
- Discuss steps of a literature review
- Write a review essay of considerable length (4000 words)
- Write an essay in American Psychological Association or Vancouver format.
- Conclude a novel, meaningful, informed, and testable research hypothesis from a literature review.
- Identify cohort design study.
- Discuss types of cohort study.
- Explain case-control study.
- Discuss advantages of case-control study.
- Explain difference between retrospective cohort study and a case-control study.
- What are the research objectives?
- How to make research objectives SMART?
- Research Questions:
- What is research question?
- Criteria of a good research question
- Sources of research questions
- Elements of a research question
- Criteria for a bad research question
- Example of a research question
- Explain the difference between research design and research methodology.
- Define research design.
- Discuss types of research design
- Explain question types are used in research design's types.
- Describe in detail different types of research methodologies.
- Identify the strengths and weaknesses of the different study designs.
- Assess whether research studies are using the most appropriate study design
- Understand the advantages and disadvantages of randomize clinical trials.

- Understand the concepts of clinical trials.
- Understand the different designs for clinical trials.
- Understand the elements of the study design.
- Understand commonly used qualitative methodologies in health care.
- Understand the ways in which qualitative and quantitative approaches can be combined.
- Describe steps to design, data collection and analysis for a qualitative project.
- Use qualitative methods, including observation, interviews, and focus groups.
- Describe the thematic qualitative data analysis.
- Recognize the importance of data collection and its role in determining scope of inference.
- Demonstrate a solid understanding of interval estimation and hypothesis testing.

Choose and apply appropriate statistical methods for analyzing one or two variables.

- Identify cases and variables in a dataset and classify variables as categorical or quantitative.
- Recognize that data and knowledge of statistics allows you to investigate a wide variety of interesting phenomena.
- Distinguish between a sample and a population.
- Recognize when it is, and is not, appropriate to use sample data to infer information about a population.
- Recognize that not every association implies causation.

Identify potential confounding variables in an observational study.

- Understand and critique data-based claims.
- Interpret statistical results.
- correctly, effectively, and in context.
- Appreciate the power of data.
- Demonstrate the ability to calculate the relevant statistical tests
- Recognize the importance of data collection and its role in determining scope of inference.
- Demonstrate a solid understanding of interval estimation and hypothesis testing.
- Choose and apply appropriate statistical methods for analyzing one or two variables.
- Statistical Analysis of Questionnaire
- Define the Questionnaire.
- Specify what information will be sought.
- Determine the type of questionnaire and method of administration.
- Determine the content of individual questions.
- Determine the form of response to each question.
- Determine the wording of each question.
- Determine an appropriate numerical summary statistic(s) and visualization for any one or two variables being analyzed.
- Define a research proposal
- Discuss aims of a research proposal

Explain sections of a research proposal

- Describe methodologies that are used to investigate the effects of health care interventions.
- Have a basic understanding of the approaches to statistical analysis that can be used with these methodologies.
- Develop an understanding of the types of approaches that can be used for statistical analysis in each type of study design.
- Know the key factors to look out for when appraising research articles, regardless of the study design employed.
- Know the key questions to ask when appraising systematic reviews (and meta-analyses), randomized controlled trials, diagnostic studies, and qualitative studies.
- Know the different types of selection bias and measurement bias that may operate in different study designs.
- Save and retrieve the full text of materials from evidence searches.

Critically appraise the most common types of clinical research papers (interventions, harm, diagnostic tests, and systematic reviews).

- Understand the importance of evidence-based medicine in healthcare.
- Know how to formulate clinically relevant, answerable questions using the Patient Intervention Comparison Outcome (PICO) framework.
- Understand the importance of assessing the quality and validity of evidence by critically appraising the literature.
- Know that different study designs provide varying levels of evidence.
- Know how to assess and implement new evidence in clinical practice.
- Understand the importance of regularly evaluating the implementation of new evidence-based practice.
- Understand why clinical recommendations are regularly updated and list the steps involved in creating new clinical practice guidelines.

- Describe the main characteristics of the scientific writing.
- Identify the elements of the scientific paper.
- Discuss the function, structure, and writing style of each element of scientific paper.
- Respect the academic integrity, honesty, and ethics of scientific writing.
- Learn how to write a coherent article.
- Develop good sentence and paragraph structure.
- Identify and correct the most common and stylistic errors.
- Learn to use powerful language and to write more succinctly.

Improve grammar and punctuation

- Learn to Submit to the right journal (scope and prestige)
- Learn to apply ethical standards.

D. Course Content

No.	List of Topics
1	Study design (12 hours)
2	Literature review (18 hours)
3	Writing a proposal (11 hours)
4	Data Collection methods & Instruments (7 hours)
5	Biostatistics clinical research (6 hours)
6	Principles & Components of EBM (8 hours)
7	Critical appraisal & Check list (5 hours)
8	Scientific writing (7 hours)
9	Research publications (10 hours)

E. Assessment tools

#	Assessment task	Percentage of Total Assessment Score
2	Quiz	20%
3	Midterm Exam	20%
4	Final Written Exam	40%
5	Research proposal / Poster day.	20%
	Total	**100%**

F. Learning Resources

Required Textbooks	**1. HEALTH RESEARCH METHODOLOGY. A Guide for Training in Research Methods. Second Edition. URL: http://www.wpro.who.int/publications/docs/Health_research_edited.pdf**
Essential Reference Material	**2. A Practical Guide for Health Researchers. URL: http://www.who.int/ethics/review-committee/emro_ethics_dsa237.pdf**
Electronic Material	1. Akobeng, A. K. 'Principles of Evidence Based Medicine'. Archives of Disease in Childhood 90, no. 8 (8 January 2017): 837–40. doi:10.1136/adc.2017.071761. 2. Greenhalgh, Trisha. 'Narrative Based Medicine in an Evidence Based World'. BMJ 318, no. 7179 (30 January 2017): 323 –325. 3. LoBiondo-Wood G. Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice. 8th ed. Mosby; 2014