The University of Jordan, School of Medicine

Quantitative Research for Medical Students

**1st Semester 2020/2021**

Course title: البحث الطبي الكمي

Course number: 0510491

Credit hours: 2 credit hours

Semester: 1st, 2020/2021

Course Instructor: Muhammad Darawad, Ph.D.

E-mail: [m.darawad@ju.edu.jo](mailto:m.darawad@ju.edu.jo)

Office phone No.: 5355000, extension: 23162

Office Hours: by appointment

**Course Description:**

As stated in the approved study plan.

The purpose of this course is to introduce medical student to quantitative research methods and process. The research process will be discussed and reviewed. The course explains quantitative medical research concepts related to purposes, methods, designs, literature review, sampling, and data collection. The course also focuses on experimental and non-experimental research designs with their advantages and limitations. Practical examples of research are presented all through the course and students are required to write a research proposal to demonstrate understanding of the course concepts.

**Course aim and outcomes:**

The course aims to introduce students to quantitative research concepts, methods and process. It allows students to 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

* Understand key concepts related to quantitative research
* Understand the purpose of conducting research
* Recognize sources for research problems
* Recognize a researchable problem
* Begin to develop a research problem
* Understand how to develop a hypothesis, research question or objective.
* Identify components of a working/researchable hypothesis
* Understand the importance of the literature review
* Identify appropriate sources for a literature review
* Identify quantitative research designs
* Differentiate between experimental and non-experimental research,
* Differentiate between quantitative and qualitative research
* Explain what is validity and reliability in quantitative research
* Institute measures to ensure quality of data and measurement.
* Differentiate between population, target population, and sample
* Identify sampling techniques and their limitations
* Identify sample selection and recruitment methods
* Identify data collection methods.
* Compare between data collection methods
* Understand ethical principles related to research.
* Appreciate the importance of following ethical guidelines when writing and conducting research involving human subjects
* Demonstrate ability to write quantitative research proposal in selected medical topic

**Evaluation Methods**

Midterm and final exams will be conducted during the first semester.

Proposal assignment will be organised and submitted in the 2nd semester.

|  |  |
| --- | --- |
| **Evaluation Item** | **Marks** |
| Midterm exam |  |
|  |  |
| Final exam |  |
| **Total** |  |

**Required book:**

* Jacobsen, Kathryn H. (2017) Introduction to Health Research Methods: a Practical Guide, 2nd edition. Publisher: Jones & Bartlett Learning.

**Recommended References:**

* 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.
* American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.
* <http://e-lilbrary.ju.edu.jo>

**Teaching Strategies:**

* Also, due to Covid-19 Pandemic, online teaching will be used on Microsoft Teams. Each section will be on a Team.
* Lectures will be uploaded 2-3 days before class, and the class be solely for discussion.
* Students are expected to read the assigned chapters, watch the recorded presentation, and participate in class discussions.

Muhammad Darawad

Topics’ Outline and Schedule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Wks** |  | **Topic** | **Chapters** | **Exam topics** |
| 1 | **Step 1:**  **Identifying a Study Question** | Course overview | 1 | Topics included in **Midterm exam** |
| Selecting a general topic | 2 |
| Reviewing the literature | 3 |
| 2 | Focusing the research question | 4 |
| Collaborating | 5 |
| Co-authoring | 6 |
| 3 | **Step 2:**  **Selecting a Study Approach** | Overview of study approaches | 7 |
| Case series | 8 |
| 4 | Cross-sectional | 9 |
| case-control studies | 10 |
| Cohort studies | 11 |
| 5 | Experimental studies | 12 |
| correlational studies | 14 |
| 6 | **Mid-Term Exam (Date & Time TBA)** | | | |
| 7 | **Step 3:**  **Designing the Study and Collecting Data** | Research protocols | 15 | Topics included in **Final exam** |
| 8 | Population sampling  Sample size estimation | 16, 17 |
| 9 | Questionnaire development Surveys and interviews | 18, 19 |
| 10 | Additional assessment | 20 |
| 11 | Secondary Analysis & Existing data sets | 21 |
| Systematic Reviews & meta-analyses | 22 |
| 12 | Research ethics and ethical review | 23, 24 |
| 13 | **Step 5:**  **Reporting Findings** | Article structure and citing, | 32, 33 |
| Conclusion | — |
| 14 | **Final Exam (Date & Time TBA)** | |  |

* Step 4: Analysing Data (This is already covered in the statistics course, it won’t be included in our course).