

Course:	Research Methods – 04037124/04037130 (3 Cr. – Core Course)
Catalog Data:	Principles of the Scientific Method: Theory and Measurement ,Principles of the Scientific Method: Validity and Control ,Ethical Issues in a Scientific Research ,Non-Experimental Research: Observational, Archival, and Case-Study Research ,Non-Experimental Research: Survey Research ,Single-Subject Experimental Research ,Group Experimental Research: Single Factor Designs ,Group Experimental Research: Factorial Designs ,Quasi Experimentation ,Reporting Research Results, Conclusions: Bias and Limitations of Experimental Scientifically (Epilogue).
Prerequisites by Course:	N/A
Prerequisites by Topic:	Students are assumed to have sufficient knowledge of qualitative and quantitative analysis.
Textbook:	Richard F. Fellows, Anita M. M. Liu. Research Methods for Construction, 4th Edition, 2015.
References:	SAUNDERS, M., P. LEWIS and A. THORNHILL. 2003. Deciding on the research approach and choosing a research strategy. Research Methods for Business Students, 3ed ed. Prentice Hall Financial, London, UK. Lecture Notes
Course Website:	
Schedule & Duration:	16 week, 16 Lectures, 180 minutes (including exams)
Minimum Student Material:	Textbook, some instructor notes.
Minimum College Facilities:	MS Teams.
Course Objectives:	<ol style="list-style-type: none"> 1. To provide the students with the basic skills of scientific research 2. To determine the research problem, data collection, research design, data analysis, validity and reliability and writing the final report 3. To review certain topics of inferential statistics and their applications will be clarified 4. To conduct a literature review and identify research questions 5. To design research that is both rigorous and relevant; research ethics; and writing techniques
Course Outcomes and Relation to MSc Program Outcomes:	<ol style="list-style-type: none"> 1. Explain what research is and distinguish between different types of research 2. Explain the hallmarks of scientific research 3. Explain different parts of the research 4. Describe the process of induction and deduction 5. Able to distinguish between different research types and parts 6. Know the characteristics and power of different types of scale 7. Able to identify problem areas that needed to be study

8. Understand the concepts of validity and reliability
9. Write a scientific research
10. Able to criticize research and different studies

Course Topics:

1. Introduction to research
2. Scientific investigation
3. The research process: the broad problem area and defining the problem statement
4. The research process: theoretical framework and hypothesis development
5. The research process: elements of research design
6. Measurement of variables: operational definition
7. Measurement: scaling, reliability, validity
8. Data collection method
9. Sampling
10. Quantitative data analysis: hypothesis testing
11. Qualitative data analysis

Computer Usage:

SPSS-MATLAB

Attendance:

Class attendance will be taken every class.

Assessments:

Mid-Term, Attendance and assignment, and Final Exams.

Grading policy:

Mid-term: 35%

Attendance, short quizzes and project: 25%

Final: 40%

Total: 100%

Instructors:

Dr. Moawiah A. Alnsour

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Office #: 4337

Class Time and Location:

Wednesday: (16:00-19:00 PM) Section-01

Program Outcomes (PO)

1	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3	An ability to communicate effectively with a range of audiences
4	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

Last Updated:

24 October 2022