



T-104  
2022

## Course Specification

Course Title: **Research Methods**

Course Code: **CS1752**

Program: **Computer Science**

Department: **Computer Science and Engineering**

College: **Computer Science and information technology**

Institution: **Albaha University**

Version: **1.0**

Last Revision Date: **March 30, 2023**



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## A. General information about the course:

### Course Identification

1. Credit hours: 3

#### 2. Course type

a. University  College  Department  Track  Others

b. Required  Elective

3. Level/year at which this course is offered: 10 / 4<sup>th</sup> year

#### 4. Course general Description

Lecture:

The course introduces students to the fundamental concepts, principles, terms, theories and applications of research methods. The various stages of research will be introduced and discussed: Problem Statement, Research Questions / Hypotheses, Theoretical framework, Review of Literature, Data collection, Data Analysis, Findings and Discussion, Summary, Recommendations, Conclusions and References. It will be emphasized that these stages and parts of the research process are cyclical rather than linear. The differences between the various research designs Quantitative, Qualitative and Mixed Methods will be explained and discussed. Referencing and citations conventions will also be particularly pointed out. The course will combine theory and practice throughout the term and students will be given an opportunity to write a research proposal, conduct a small-scale research project and write it up.

5. Pre-requirements for this course (if any): none

6. Co- requirements for this course (if any): none

#### 7. Course Main Objective(s)

At the end of the course students will be able:

- To understand the nature of research and research writing stages, sections and processes.
- To identify and explain rudimentary research principles, terms, types and concepts (this will include among others: stating a problem, writing good research questions/hypotheses, etc.).
- To differentiate between various research methods and designs, including Quantitative, Qualitative, Mixed Methods, etc.
- To formulate good and valid research questions/hypotheses.
- To learn how to read and critically review the literature of a particular research topic.
- To define what a "Theoretical Framework "is.
- To get acquainted with the rudimental facts about data analysis (this includes some basic practice).
- To define and explain instruments of data collection, such as Questionnaire, Interview, Observation, Focus Group Discussions, etc.



- To cite and quote correctly and validly (inside and outside text) including the list of references and resources.
- To discuss the results relating them to the research objectives, questions/hypotheses and the literature.
- To learn how to write a summary, conclusion and recommendations

### 1. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	33	100%
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
4.	Distance learning		

### 2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	33
2.	Laboratory/Studio	-
3.	Field	-
4.	Tutorial	-
5.	Others (specify)	-
	<b>Total</b>	<b>33</b>



## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Define research and its fundamental concepts. Explain components of a research proposal.	K1	- Lectures - Presentations	- Midterm - Research Proposal - Final Exam
1.2	Select a research design that is appropriate to a research topic.	K1	- Lectures - Presentations	- Midterm - Research Proposal - Final Exam
1.3	Distinguish between a variety of research methods and designs: Quantitative, Qualitative Mixed.	K1	- Lectures - Presentations	- Midterm - Research Proposal - Final Exam
2.0	Skills			
2.1	Read and critically review the literature of a particular research topic.	S1	- Lectures - Presentations	- Research Proposal - Final Exam
2.2	Discuss primary characteristics of data analysis.	S2	- Lectures - Presentations	- Research Proposal - Final Exam
2.3	Discuss the findings with reference to the research objectives, questions/hypotheses and the relevant literature.	S3	- Lectures - Presentations	- Research Proposal - Final Exam
3.0	Values, autonomy, and responsibility			
3.1	Observe research ethics (such as avoiding plagiarism, acknowledging and giving credit where credit is due, using data for research purposes only, etc.).	V1	- Lectures - Presentations	- Research Proposal - Final Exam

## C. Course Content

No	List of Topics	Contact Hours
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1.	Introduction	1
2.	Research: Fundamental Concepts (definition, terms, philosophy, aims, objectives, difference between research subject and research topic, etc.).	3
3.	Starting a Research Project: Study problem (stating the problem), formulating research questions/hypotheses, etc.	3
4.	The Literature and Theoretical Framework (central ideas of how to read and review the relevant literature). How to quote and cite sources correctly and validly.	3
5.	Data: Description and collection methods. Differences between Quantitative, Qualitative and Mixed Methods	3
6.	Writing a research proposal (Students need to write a proposal at this level and keep working on it as the course proceeds).	3
7.	Methods of data collection: General Introduction	3
8.	Questionnaires, Interviews, Observation, Focus Group Discussions, etc. (practice doing one of these methods)	3
9.	Data Analysis: Key Ideas and Methods	3
10.	Results and Discussion: How to present and discuss findings	3
11.	Summary, Conclusion and Recommendations/Implications	3
12.	Final exam and project submission/presentation	2
Total		33

## D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm	Week 6	10 %
2.	Research Proposal	All along	20 %
3.	Presentations	Week 10	20 %
4.	Final Exam	Week 12	50 %

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.)

## E. Learning Resources and Facilities

### 1. References and Learning Resources

#### Essential References

1. Marczyk, G., DeMatteo, D&Festinger, D., Essentials of Research Design and Methodology. USA, John Wiley and Sons, Inc., 2005.



	2. Neville, C., The Complete Guide to Referencing and Avoiding Plagiarism, New York, Open University Press, 2007
Supportive References	<ul style="list-style-type: none"> <li>• Computer Science Curriculum 2013 – <a href="http://cs2013.org">http://cs2013.org</a></li> <li>• ACM (Association for Computer Machinery) Curricula Recommendations - <a href="http://www.acm.org/education/curricula-recommendations">http://www.acm.org/education/curricula-recommendations</a></li> </ul>
Electronic Materials	<ul style="list-style-type: none"> <li>• ACM (Association for Computer Machinery) web site - <a href="http://www.acm.org/">http://www.acm.org/</a></li> <li>• IEEE Computer Society web site - <a href="http://www.computer.org/portal/web/guest/home">http://www.computer.org/portal/web/guest/home</a></li> <li>• Access to the Saudi Digital Library (SDL).</li> <li>• Using the learning management system of the university – Rafid System (<a href="https://lms.bu.edu.sa/">https://lms.bu.edu.sa/</a>).</li> </ul>
Other Learning Materials	None

## 2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> <li>• A classroom or lecture hall with whiteboard for 25 students.</li> <li>• A digital circuit's laboratory.</li> </ul>
Technology equipment (projector, smart board, software)	<ul style="list-style-type: none"> <li>• A digital image projection system with connection to desktop computer and laptop computer.</li> <li>• High speed Internet connection.</li> <li>• An instructor computer station.</li> </ul>
Other equipment (depending on the nature of the specialty)	None





## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	<ul style="list-style-type: none"> <li>● Students</li> <li>● Faculty</li> <li>● Peer Reviewers</li> <li>● Program Leader</li> <li>● Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>● Surveys (indirect).</li> <li>● Direct feedback from students (interview between Program leader and students ).</li> <li>● Course evaluation by Peer Reviewers (indirect).</li> <li>● Class visit by Program Leader</li> <li>● Comprehensive Course report (where we can find information about teaching difficulties and action plan, ...)</li> </ul>
Effectiveness of students assessment	<ul style="list-style-type: none"> <li>● Students</li> <li>● Faculty</li> <li>● Peer Reviewers</li> <li>● Course Coordinator</li> <li>● Exam Evaluation Committee</li> <li>● Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>● Surveys (indirect).</li> <li>● Direct feedback from students (interview between Program leader and students ).</li> <li>● Assessment results (direct)</li> <li>● Course evaluation by Peer Reviewers (indirect).</li> <li>● Comprehensive Course report (where we can find information about assessment difficulties and action plan, ...)</li> <li>● Exam evaluation by the Exam Evaluation Committee (indirect)</li> </ul>
Quality of learning resources	<ul style="list-style-type: none"> <li>● Students</li> <li>● Faculty</li> <li>● Peer Reviewers</li> <li>● Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>● Surveys (indirect)</li> <li>● Course evaluation by Peer Reviewers (indirect).</li> <li>● Comprehensive Course report (where we can find information about difficulties and challenges about learning resources as well as consequences and action plan, ...)</li> </ul>





Assessment Areas/Issues	Assessor	Assessment Methods
The extent to which CLOs have been achieved	<ul style="list-style-type: none"> <li>● Faculty</li> <li>● Program Leader</li> <li>● Course Coordinator</li> </ul>	<ul style="list-style-type: none"> <li>● Student Results (direct)</li> <li>● Comprehensive Course report (where we can find the CLO assessment results)</li> </ul>
Other	None	None

**Assessor** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

### G. Specification Approval Data

COUNCIL /COMMITTEE	Curriculum Committee Meeting
REFERENCE NO.	
DATE	MARCH 30, 2023

