



<b>Faculty: Information Technology</b>	
<b>Department: Software Engineering</b>	<b>Program: Master</b>
<b>Academic year:</b>	<b>Semester:</b>

## Course Plan

### First: Course Information

<b>Course No.:</b> 1503711	<b>Course Title:</b> <i>Research Methodology</i>	<b>Credit Hours:</b> 3	<b>Theoretical:</b> 3	<b>Practical:</b> 0
<b>Prerequisite No. and Title:</b>		<b>Section No.:</b>	<b>Lecture Time:</b>	
<b>Level in JNQF</b>	.....			
<b>Type Of Course:</b>	<input type="checkbox"/> <i>Obligatory University Requirement</i> <input type="checkbox"/> <i>Elective University Requirement</i> <input checked="" type="checkbox"/> <i>Obligatory Faculty Requirement</i> <input type="checkbox"/> <i>Elective Faculty Requirement</i> <input type="checkbox"/> <i>Obligatory Specialization Requirement</i> <input type="checkbox"/> <i>Elective Specialization Requirement</i> <input type="checkbox"/> <i>Ancillary course</i>			
<b>Type of Learning:</b>	<input type="checkbox"/> <i>Face-to-Face Learning</i> <input type="checkbox"/> <i>Blended Learning (2 Face-to-Face + 1 Asynchronous)</i> <input checked="" type="checkbox"/> <i>Online Learning (1 Synchronous+ 1 Asynchronous)</i>			

### Second: Instructor's Information

<b>Course Coordinator</b>					
<b>Name:</b>		<b>Academic Rank:</b>			
<b>Office Number:</b>		<b>Extension Number:</b>		<b>Email:</b>	
<b>Course Instructor:</b>					
<b>Name:</b>		<b>Academic Rank:</b>			
<b>Office Number:</b>		<b>Extension Number:</b>		<b>Email:</b>	
<b>Office Hours:</b>	<i>Sunday</i>	<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>

### Third: Course Description

This course provides an integrative approach to research methodologies, particularly suited for postgraduate studies in computer science and related fields. The course focuses on understanding and applying research philosophies and methodologies, effective proposal and report writing, and essential data collection and analysis skills. It uniquely blends traditional research approaches with innovative techniques, preparing students for successful academic and professional research endeavors in the evolving landscape of trending technology.

### Fourth: Course Objectives

1. Understand Research Fundamentals: Build a foundational knowledge of research principles and methodologies relevant to computer science, information systems, and cybersecurity.
2. Develop Proposal and Report Writing Skills: Gain proficiency in writing research proposals and reports, focusing on clarity, structure, and relevance.
3. Master Literature Review Techniques: Learn to conduct in-depth literature reviews, critically analyzing existing research and identifying key gaps and trends.
4. Master Data Collection and Analysis Techniques: Acquire practical skills in collecting and analyzing data, using both traditional and modern tools and techniques relevant to the technology sector.
5. Understand Research Ethics and Compliance: Grasp the ethical considerations and compliance requirements in conducting research in tech-related fields.
6. Develop Proposal and Report Writing Proficiency: Gain expertise in formulating clear and concise research proposals and reports, essential for academic and professional success.

## Fifth: Learning Outcomes

<i>Level descriptor according to (JNQF)</i>	<i>CILOs Code</i>	<i>CILOs</i> If any CLO will not be assessed in the course, mark NA.	<i>Associated PILOs Code</i> Choose one PILO for each CILO*	<i>Assessment method</i> Choose at least two methods
<b>Knowledge</b>	<b>K1</b>	Understand advanced research methodologies specific to computer science, information systems, and cybersecurity.	<b>PK2</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
	<b>K2</b>	Grasp the ethical and legal aspects of conducting technology research.	<b>PK1</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
	<b>K3</b>	Ability to conduct research thorough and critical literature reviews.	<b>PK3</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
	<b>K4</b>	Acquire knowledge of various data analysis techniques suitable for technology research.	<b>PK4</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
<b>Skills</b>	<b>S1</b>	Develop the ability to design a comprehensive research proposal, effectively utilizing techniques like the funnel strategy and mind mapping.	<b>PS5</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
	<b>S2</b>	Acquire skills in foundational research writing, including constructing a literature review and developing an analytical framework.	<b>PS2</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>

	<b>S3</b>	Learn to effectively collect, analyze, and present data in a manner appropriate to the fields of Computer Science, Information Systems, and Cybersecurity.	<b>PS1</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
	<b>S4</b>	Cultivate the ability to manage a research project from start to finish, including planning, resource management, and time management.	<b>PS4</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
<b>Competencies</b>	<b>C1</b>	Mastering competence in conducting research in the areas of interest	<b>PC3</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
	<b>C2</b>	Demonstrate ability to independently identify problems and formulate purpose and research questions/design criteria.	<b>PC2</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>
	<b>C3</b>	Ability to write up well-documented and well-written research proposal.	<b>PC5</b>	<ul style="list-style-type: none"> <li>• Assignments</li> <li>• quizzes</li> <li>• Research proposal</li> <li>• Final Exam</li> </ul>

\*CILOs: Course Intended Learning Outcomes; PILOs: Program Intended Learning Outcomes; For each CILO, the PILO could be the same or different.

## Sixth: Learning Resources

<b>Main Reference:</b>	<i>Research Techniques for Computer Science, Information Systems and Cybersecurity</i>			
<b>Author:</b> Uche M. Mbanaso, Lucienne Abrahams, Kennedy Chinedu Okafor	<b>Issue No.:</b> 1 <sup>th</sup>	<b>Print:</b> Springer Nature	<b>Publication Year:</b> 2023	
<b>Additional Sources and Websites:</b>	<ul style="list-style-type: none"> <li>Selected Research Papers</li> <li>Umesh Kumar B. Dubey, D. P. Kothari - Research Methodology Techniques and Trends (2022, CRC Press_Chapman &amp; Hall).</li> <li>Zobel, J. (2014). Writing for Computer Science. Springer London.</li> <li>Smith, A. (2012). Research Methodology: A Step-by-step Guide for Beginners. Nurse Education in Practice, 12.</li> <li>Živančević, K., Božić, D., Baralić, K., &amp; Đukić-Ćosić, D. (2022). The Future of Data Mining. Nova Science.</li> <li>Thomas, C. (2021). Research Methodology and Scientific Writing.</li> <li>Creswell, J. W. (2023). Research designs. Qualitative, quantitative, and mixed methods approaches, 6 edition.</li> </ul>			
<b>Teaching Type:</b>	<input type="checkbox"/> Classroom <input type="checkbox"/> Laboratory <input type="checkbox"/> Workshop <input checked="" type="checkbox"/> MS Teams <input checked="" type="checkbox"/> Moodle			

## Seventh: Course Structure

Lecture Date	Course Intended Teaching Outcomes (CILOs)	Topics	Teaching Procedures *	Teaching Methods**	References***
Week 1	K1, s1, c1	Introduction to Scientific Research Methodology	Online - Synchronous	Lecturing	Textbook-ch1
Week 2	C2, K1, k2	<ul style="list-style-type: none"> <li>Computer Science (CS), Information Systems (IS) and Cybersecurity (CY) Research</li> <li>The Intersection of CS, IS and CY Research</li> </ul>	Online - Synchronous	Lecturing, Tools, Videos and Assignments	Textbook-ch2, Research Papers
Week 3	S2, k2, c1	<ul style="list-style-type: none"> <li>Designing the research proposal</li> </ul>	Online - Synchronous	Lecturing, Tools, Videos	Textbook-ch3
Week 4	K2,k3,s1,s2,c2	<ul style="list-style-type: none"> <li>Writing a Short Research Proposal</li> </ul>	Asynchronous	Case Study, Examples, Videos and Assignment	Textbook-ch3

		<ul style="list-style-type: none"> <li>How to choose a research topic</li> </ul> <p>Research proposal examples</p>			
<b>Week 5</b>	K1, k2, s3,s4,c1	<ul style="list-style-type: none"> <li>Adopting a Funnel Strategy and Using Mind Mapping to Visualize the Research Design</li> </ul>	Online - Synchronous	Research Case study, Lecturing, Video	Textbook-ch4
<b>Week 6</b>	K4, S3,s4, c2	<ul style="list-style-type: none"> <li>Citation Management Using Mendely</li> <li>ystematic Literature Review (SLR) and Systematic Mapping (SM)Folder</li> <li>How to Read a Journal Article</li> </ul>	Asynchronous	Assignment, videos, examples case study Quiz	Textbook-ch3, ch4
<b>Week 7</b>	K4, s3,c3	<ul style="list-style-type: none"> <li>Background Discussion and Literature ReviewFile</li> </ul>	Online - Synchronous	Lecturing, Video	Textbook-ch5
<b>Week 8</b>	K3,K4, s4.c2,c3	<ul style="list-style-type: none"> <li>annotated bibliography</li> <li>Research Background</li> <li>Literature Review</li> <li>Ethics and Research Integrity</li> </ul>	Asynchronous	Research Tools Assignments Videos Quiz	Textbook- ch4, ch5
<b>Week 9</b>	K2, k3 ,s2.s3	<ul style="list-style-type: none"> <li>Research Philosophy, Design and Methodology</li> </ul>	Online - Synchronous	Lecturing, Videos	Textbook-ch6
<b>Week 10</b>	C4, s2,s3,s4	<ul style="list-style-type: none"> <li>How to write a research methodology   a step-by-step guide for beginners</li> <li>Research Methodology Example: Step-By-Step</li> </ul>	Asynchronous	Research Tools Assignments Videos	Textbook-ch6
<b>Week 11</b>	K4,s2,s3,c2,c3	<ul style="list-style-type: none"> <li>Data Collection, Presentation and Analysis</li> </ul>	Online - Synchronous	Lecturing, Research tools	Textbook-ch7

		<ul style="list-style-type: none"> <li>Validation Research Methods</li> </ul>			
<b>Week 12</b>	K2,k2, s3,c1,c2	<ul style="list-style-type: none"> <li>How to write a well – defined research proposal</li> <li>Data collection Methods   Data Science</li> <li>Guide To The Data Analysis Process</li> <li>How to organize, present and share data</li> </ul>	Asynchronous	Research Tools Assignments Videos	Textbook-ch7
<b>Week 13</b>	S3,s4,c2,c3	<ul style="list-style-type: none"> <li>Practical Thesis Writing Approach</li> <li>Proposal Write-up</li> </ul>	Online - Synchronous	Lecturing and videos	Textbook-ch8, Research Papers
<b>Week 14</b>	K3,k2,s1,s2,s3,s4,c1,c2,c3	<ul style="list-style-type: none"> <li>How to convert a dissertation or thesis into a manuscript</li> <li>How to Write a Journal Article</li> </ul>	Asynchronous	Practice, Assignments Quiz	Textbook-ch6, ch7, ch8
<b>Week 15</b>	K3,k2,s1,s2,s3,s4,c1,c2,c3	Research proposal Dissections	Online - Synchronous	Research proposal rubric. Oral presentation	Textbook-ch1 - ch8
<b>Final Exam</b>					

\*Teaching procedures: (Face-to-Face, synchronous, asynchronous).

\*\* Teaching methods: (Lecture, video....).

\*\*\* Reference: (Pages of the book, recorded lecture, video....)

## Eighth: Assessment Methods

Methods	Online Learning	Blended Learning	Face-To-Face Learning	Specific Course Output to be assessed									
				**If any CILO will not be assessed in the course, mark NA.									
				K1	K2	K3	K4	S1	S2	S3	S4	C1	C1
First Exam													
Second Exam													
Mid-term Exam													
Participation													
Asynchronous Activities	20			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Quizzes	10			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research Proposal	30			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Group presentation													
Final Exam	40			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Total out of 100	100												



## Ninth: Course Policies

- All course policies are applied to all teaching patterns (online, blended, and face-to-face Learning) as follows:
  - a. Punctuality.
  - b. Participation and interaction.
  - c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).

Approval	Name	Date	Signature
Head of Department	Dr. Mohammad Al-Refai		
Faculty Dean	Prof. Dr. Mohammad Hassan		