



Course Specification

(Postgraduate Programs)

Course Title: Master's Capstone Research Project

Course Code: CE6097

Program: Master of Science in Computer Engineering

Department: Computer and Network Engineering

College: College of Computing

Institution: Umm Al-Qura University

Version: 2.0

Last Revision Date: 12/4/2025



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A. General information about the course:

1. Course Identification:

1. Credit hours: (6)

2. Course type

A. University College Department Track

B. Required Elective

3. Level/year at which this course is offered: (Level 3 and 4)

4. Course General Description:

Capstone project is a two-semester course in which student design a project to solve a computer engineering problem under the direction and supervision of faculty members, considering the engineering standards and realistic constraints. The student demonstrate their ability to analyze, design, implement solutions, and communicate significant knowledge and comprehension. During the second semester and after implementing, testing, and evaluating the proposed solution, students submit a final report, a poster, and prepare a PowerPoint presentation. Students are expected to show their abilities in designing, developing, orally presenting and documenting a project, just like they will need to in their professional lives. That is to say, the students are expected to display their social and communication skills as well as their technical abilities.

5. Pre-requirements for this course (if any):

N/A

6. Co-requisites for this course (if any):

N/A

7. Course Main Objective(s):

- To apply the knowledge gained in earlier courses to the design process.
- Familiarize the student with the engineering design process Definition, Synthesis, Analysis and Implementation, using suitable engineering standards and multiple realistic constraints.
- To improve communication skills and promote organizational skills.
- To stress the importance of other influences (constraints) on design such as economics, reliability, performance, safety, ethics and social impacts.



- To demonstrate ability to work independently and as a team with their advisor to accomplish the project.
- To emulate the post graduate job environment.

2. Teaching Mode: (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	90	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4	Distance learning		

3. Contact Hours: (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify) Meetings with the advisor	90
	Total	90

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

Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Demonstrate comprehensive knowledge of state-of-the-art techniques in the project's field.	K1	<ul style="list-style-type: none"> • Discussion • Brainstorming • Self Learning 	<ul style="list-style-type: none"> • Written report • Oral Test • Oral Presentation • Project



Code	Course Learning Outcomes	Code of PLOs aligned with the program	Teaching Strategies	Assessment Methods
1.2	Position the project in comparison to the existing state-of-the-art proposals from the project's research literature.	K2	<ul style="list-style-type: none"> Project 	<ul style="list-style-type: none"> Written report
2.0	Skills			
2.1	Design and implement a major software and/or a hardware system that meets a set of design requirements and	S1 and S2	<ul style="list-style-type: none"> Project Discussion Brainstormin Self Learning 	<ul style="list-style-type: none"> Written report Oral Test Oral Presentation Project
2.2	Apply modern engineering and scientific research methodologies and tools to support their design decisions according to engineering standards.	S1		
2.3	Communicate their technical accomplishment both orally and in writing.	S3		
2.4	Evaluate the project artifact's performance.	S4		
3.0	Values, autonomy, and responsibility			
3.1	Incorporate the issues of economics environment engineering ethics health and safety manufacturability liability and responsibility in their design.	V1	<ul style="list-style-type: none"> Project Discussion Brainstorming Self Learning 	<ul style="list-style-type: none"> Written report Oral Test Oral Presentation Project
3.2	Recognize the need for lifelong learning because of the nature of change in technology.	V1		
3.3	Appreciate concepts of professionalism and ethics.	V1		



C. Course Content:

No	List of Topics	Contact Hours
1.	The topics will be determined based on the requirements of the project by the advisor	90
Total		90

D. Students Assessment Activities:

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Progress reports	weekly	15%
2.	Oral discussion	weekly	15%
3.	Project report	Last week of the second semester	35%
4.	Project presentation	Last week of the second semester	35%

*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	“Procedures for Research Projects” by The Graduate Studies Committee in the department
Supportive References	“Capstone Project Manual” by the Project Committee, Computing College, Umm Al-Qura University
Electronic Materials	The instructor may provide as per requirements.
Other Learning Materials	The instructor may provide as per requirements.

2. Educational and Research Facilities and Equipment Required:

Items	Resources
Facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classrooms
Technology equipment (Projector, smart board, software)	Projector
Other equipment (Depending on the nature of the specialty)	The instructor may provide as per requirements.



F. Assessment of Course Quality:

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students, Program Leaders	Indirect
Effectiveness of students' assessment	Program Leaders	Direct
Quality of learning resources	Students, Faculty	Indirect
The extent to which CLOs have been achieved	Students, Faculty, Program Leaders	Direct and Indirect
Other		

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

Assessment Methods (Direct, Indirect)

G. Specification Approval Data:

COUNCIL /COMMITTEE	Computer and Network Engineering Department Council
REFERENCE NO.	The 18 th Session Of The Academic Year 1446
DATE	15/4/2025

