

Course Title:	GRADUATION RESEARCH PROJECT
Course Code:	CSE660/3
Program:	Master Degree In Computer Engineering
Department:	Computer Engineering
Course coordinator:	Department Head
Institution:	Private Higher School of Engineers of Gafsa (ESIP)

A. Course identification

1. Credit hours:	20 (-----)
2. Course type	
a.	College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Fundamental <input checked="" type="checkbox"/> Transversal <input type="checkbox"/> Optional <input type="checkbox"/>
3. Level/year at which this course is offered:	6/3
4. Pre-requisites for this course (if any): Scientific Backgrounds, Programming, Design Tools, writing skill	

1. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Self-study	Total workload
1	Traditional classroom	220	520
2	Blended		
3	E-learning		
4	Distance learning		
5	Other ()	300		

2. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	-
2	Laboratory/Studio	-
3	Tutorial	-
4	Others (Project management, project definition in collaboration with industrial supervisor(s), regular supervision, coding, simulation, implementation and validation)	520
	Total	520

B. Course Objectives and Learning Outcomes

Course Description

The Final Year Project (FYP) is a crucial component of the computer engineering curriculum, allowing students to apply their technical and methodological skills to solve a complex problem or develop an innovative project. This project can be undertaken within a company, a research lab, or in collaboration with academic or industry partners.

The FYP provides students with an opportunity to experience real-world professional scenarios, strengthen their project management and teamwork skills, and produce a viable, well-documented solution that meets technical and practical requirements.

Course Main Objectives

- ✓ Enable students to put into practice their technical skills in computer science, including software development, system architecture, artificial intelligence, networks, and cybersecurity to design and implement innovative solutions.
- ✓ Encourage students to analyze real-world problems, identify appropriate technical solutions, and use modeling and simulation tools to validate their approaches.
- ✓ Develop students' abilities to use development tools, data management systems, signal processing software, or any other relevant software for their field of study, staying up-to-date with the latest technologies in their industry.
- ✓ Prepare students to rigorously document their work (reports, technical documentation) and to clearly present their results, both orally and visually, in front of a jury or a technical audience.
- ✓ Equip students with collaboration skills in multidisciplinary environments, enabling them to work effectively with colleagues or external partners and demonstrate leadership and team management abilities.
- ✓ Provide a practical experience that simulates industry expectations, so students are ready to enter a professional setting with both technical expertise and adaptability.

1. Course Learning Outcomes

CLOs		Aligned PLOs
	Knowledge and understanding	
1.1	✓ The student will be able to apply advanced engineering principles and knowledge across multiple subfields to solve complex real-world problems.	PLO.K1

CLOs		Aligned PLOs
1.2	✓ The student will conduct independent research, identify problems, collect and analyze data, and draw meaningful conclusions, contributing to the advancement of knowledge.	PLO.K2
1.3	✓ The student will develop expertise in a specialized area of computer science, applying this knowledge to tackle industry-specific challenges.	PLO.K3
Skills		
2.1	✓ The student will demonstrate advanced critical thinking and problem-solving skills, analyzing complex problems, designing efficient systems, and selecting appropriate solutions.	PLO.S1
2.2	✓ The student will be able to communicate complex concepts through written reports, presentations, and visual media, collaborating in multidisciplinary environments.	PLO.S2
2.3	✓ The student will demonstrate organizational, planning, and project management skills, along with teamwork abilities to address real-life situations and meet industry demands.	PLO.S3
2.4	✓ The student will analyze and assess system performance, showing awareness of real-life challenges and making improvements based on project outcomes.	PLO.S5
2.5	✓ The student will design and implement software solutions, considering factors like changing requirements, planning constraints, and budget limitations.	PLO.S7

C. Course Content

No	List of Topics	Contact Hours (weeks)
1	Topic selection, literature review, project planning	1-3
2	Architecture design, tool selection, prototyping	4-7
4	Module development and integration	8-12
5	Functional testing, optimization, load testing	13-14
6	Report writing, defense preparation, and final presentation	15-16
Total		16 weeks (520 h)

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding		
PLO.K1	✓ The student will be able to apply advanced engineering principles and knowledge across multiple subfields to solve complex real-world problems.	- Supervision - Workshops and Seminars	- Project Report - Oral Defense and Presentation

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
PLO.K2	✓ The student will conduct independent research, identify problems, collect and analyze data, and draw meaningful conclusions, contributing to the advancement of knowledge	- Independent Study and Practical Work - projects	- Practical Demonstration
PLO.K3	✓ The student will develop expertise in a specialized area of computer science, applying this knowledge to tackle industry-specific challenges.		
2.0	Skills		
PLO.S1	✓ The student will demonstrate advanced critical thinking and problem-solving skills, analyzing complex problems, designing efficient systems, and selecting appropriate solutions.	- Supervision - Workshops and Seminars - Independent Study and Practical Work - projects	- Project Report - Oral Defense and Presentation - Practical Demonstration - Assignments
PLO.S2	✓ The student will be able to communicate complex concepts through written reports, presentations, and visual media, collaborating in multidisciplinary environments		
PLO.S3	✓ The student will demonstrate organizational, planning, and project management skills, along with teamwork abilities to address real-life situations and meet industry demands.		
PLO.S5	✓ The student will analyze and assess system performance, showing awareness of real-life challenges and making improvements based on project outcomes.		
PLO.S7	✓ The student will design and implement software solutions, considering factors like changing requirements, planning constraints, and budget limitations.		

2. Assessment Tasks for Students

	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Practical Work (written or oral)	Weekly	15 %
2	Practical Demonstration	14	15%
3	Oral Defense and Presentation	16	20%
4	Project Report	16	50%

E. Student Academic Counselling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice:

- 1- Office hours
- 2- Blackboard interface

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	<ol style="list-style-type: none"> 1. Documentation and tutorials specific to the chosen technology. 2. Research articles and academic literature relevant to the project topic. 3. Internal resources from the company (if applicable) and project management software/tools
Essential References Materials	PC Data projector
Electronic Materials	Lecture material in PPT Any Related material including the YouTube videos relating to engineering measurement Blackboard
Other Learning Materials	NA

2. Facilities Required

Item	Resources
Accommodation	Classroom board Computer lab with the necessary software Internet access
Technology Resources	Data projector

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment.	Students, Faculty, Program Leaders, Peer Reviewer	Direct/Indirect

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Extent of achievement of course learning outcomes.	Faculty, Program Leaders, Peer Reviewer	Direct, Indirect
Quality of Learning resources	Faculty, Program Leaders, Peer Reviewer	Direct, Indirect
Teaching and learning quality and effectiveness.	Students, Faculty Program Leaders, Peer Reviewer	Direct, Indirect

H. Specification Approval Data

Council / Committee	Computer Engineering Council
Date	11/10/2023

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