GAU, Faculty of Engineering

Course Unit Title	Software Design
Course Unit Code	CEN403
Type of Course Unit	Compulsory, computer engineering students
Level of Course Unit	BSc
National Credits	3
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	2
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	4
Semester when the course unit is delivered	7
Mode of Delivery	Face to Face, Laboratory, Web
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	Computer programming skills

Objectives of the Course

- Examining the theory; techniques associated with the design, coding, and testing of software systems.
- Gain competency in software design field and in the techniques used by professionals in this field.
- Emphasizing importance and necessity of software design skills in software development market.
- Design and release an intermediate level software package

Learning Outcomes

When this course has been completed the student should be able to		Assesment
1	Manage software development processes	1,5
2	Plan and organize resources (Hardware, Sowftware, Human)	1,5
3	Understand project metrics and project measurement	1
4	Learn testing and debugging details	1,5
5	Participate to a software development team.	5

Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	3
2	Ability to design and conduct experiments as well as to analyze and interpret data	4
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	5
4	Ability to apply systems thinking in problem solving and system design	3
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	3
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	4
7	Ability to express their ideas and findings, in written and oral form	4
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	2
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3
10	To apply fundamental concepts of software design, database design, data processing and artificial intelligence in the modeling, designing, implementing, testing and deploying software solutions.	5
11	Ability to analyse and design hardware systems by applying the principles of embedded systems, microprocessors, computer networks, distributed systems and data communication.	5

CL (Contribution Level): 1.Very Low, 2.Low, 3.Moderate, 4.High, 5.Very High

Course Contents

Week			Exams
1		Introduction to S/W Engineering	
2		Generic Phases of S/W Engineering and Process Maturity	
3		Application System Products – Term Projects are Distributed	
4		S/W Engineering Models	Proposal Eval.
5		Project Management Concepts	Model Evaluation
6		Project Metrics and Measurement	Project Evaluation
7		Term Project Assessment	
8			Midterm
9		Project Planning	Project Evaluation
10		Risk Analysis and Management	Project Evaluation
11		S/W Testing Techniques and Strategies	
12		Analysis Modelling and Diagrams	Project Evaluation
13		Design Concepts and Transferring Analysis to Design	
14		Details of Modular Design	Project Report Eval.
15			Final

Recommended Sources

Textbook: Software Engineering, A Practitioner's approach, Fifth Edition, R.S.Pressman, McGraw Hill, 2001

Supplementary Material (s): Software Engineering, Nineth Edition, I.Sommerville, Addison-Wesley, 2010

Assessment

Attendance	5%	
Homeworks	5%	
Laboratory	15%	Lab Grade= ((Lab Exam + Lab Performance) × Lab Attendance)
Midterm Exam	30%	Written Exam
Quiz	5%	Written Exam
Final Exam	40%	Written Exam
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	13	2	26
Labs and Tutorials	11	2	22
Assignments	6	3	18
Laboratory Preparation	11	2	22
Project/Presentation/Report Writing	1	20	20
Quizzes	-	-	-
Lab Exams	-	-	-
Midterm Examination	1	17	17
Final Examination	1	19	19
Self Study	13	2	26
Total Workload			170
Total Workload/30 (h)			5.67
ECTS Credit of the Course			6