

School of Engineering and Natural Sciences / Industrial Engineering (English)

2022 - 2023 Academic Year

SYSTEMS ANALYSIS and DESIGN

Syllabus

Course Description					
Name	Code	Semester	T+A Hour	Credit	ECTS
SYSTEMS ANALYSIS and DESIGN	IND3110787	Fall Semester	3+0	3	6
Prerequisites Courses	PROGRAMLAMAYA GİRİŞ				
Recommended Elective Courses					
Language of Instruction	English				
Course Level	First Cycle (Bachelor's Degree)				
Course Type	Elective				
Course Coordinator	Assoc.Prof. Melis Almula KARADAYI				
Name of Lecturer(s)	Lect. Özgür EROL				
Assistant(s)					
Aim	This course objective is to teach students the concepts of "systems approach" and "innovative system design" for technology-based engineering systems. Course is structured along the phases of systems development lifecycle and provides necessary tools and techniques for systems analysis, design and management. Students will have a hands-on learning experience applying these topics throughout a student-selected team project.				
Course Content	This course contains; Introduction to systems thinking and systems concepts,,Need Analysis,Identification of System Stakeholders ,System Stakeholder Requirements ,System Characteristics, Capabilities and System Context,From Systems Capabilities to Functions,Midterm,Input/ Output Requirements, Interface Requirements ,Developing Systems Requirements and Systems Requirements Documentation, System Verification and Validation ,System Functional Architecture,Technology-based Systems / Innovation / Digital Age / Software based systems,Final Project,Final Project.				
Course Learning Outcomes			Teaching Methods	Assessment Methods	
Students will learn to do a need and stakeholder analysis.					
Students will learn to identify and develop stakeholder requirements.					
Students will learn to identify and develop system requirements.					
Students will learn to identify and develop system functional, interface and data requirements.					
Students will learn to do develop a functional architecture, draw process flowcharts and develop system scenarios.					
Students will learn to plan and develop system verification and validation plan.					
Students will learn software-based systems analysis and design and the impact of technology.					
Students will learn the concepts of 'systems, systems approach, and complex systems				A, D, F	
Teaching Methods					
Assessment Methods			A: Written Exam, D: Project / Design, F: Performance task		
Lecture Schedule					
Sequence	Topics	Preliminary Preparation			
1	Introduction to systems thinking and systems concepts				
2					
3	Need Analysis				
4	Identification of System Stakeholders				
5	System Stakeholder Requirements				
6	System Characteristics, Capabilities and System Context				
7	From Systems Capabilities to Functions				
8	Midterm				
9	Input/ Output Requirements, Interface Requirements				
10	Developing Systems Requirements and Systems Requirements Documentation				
11	System Verification and Validation				
12	System Functional Architecture				
13	Technology-based Systems / Innovation / Digital Age / Software based systems				
14	Final Project				
15	Final Project				
Evaluation Methods		Weight(%)			
Midterm Exam		30			
General Exam		70			

Resources
The Engineering Design of Systems Models and Methods; Dennis Buede; Wiley, The Second Machine Age by Erik Brynjolfsson, Andrew McAfee.