

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

2023 - 2024 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's objective is to define the concepts of systems approach and innovative system design for technology-based engineering systems. The course is structured along the phases of the 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, Systems development life cycle (SDLC), agile and object-oriented systems development, Identifying needs and objectives / Final project in-class discussion, Project Management of systems development projects, Modelling organizations and systems using context-level data flow diagrams, entity-relationship models, use cases, and use case scenarios, Interactive and unobtrusive information-gathering techniques, Developing a system model using logical and physical Data-flow-diagrams (DFDs), Analyzing data-oriented systems using data dictionaries, data flows, data elements, data structures, and data repositories. ,Data governance, enterprise systems and virtual organizations. ,Designing effective system outputs. ,Designing effective system inputs, Technology-based Systems / Innovation / Digital Age / Software based systems ,Final Project Presentations ,Final Project Presentations.					
Course Learning Outcomes			Teaching Methods	Assessment Methods		
1. Define the concepts of system, systems approach, systems thinking, and complex systems.			13, 16, 4, 9	A, E, F		
2. Distinguishes between the system development life cycle approach, agile system development and object-oriented system analysis and design approaches.			10, 13, 16, 9	A, E, F		
3. Identifies stakeholders' needs using interactive and unobtrusive information-gathering techniques.			13, 16, 2, 9	A, E, F		
4. Models systems graphically using context-level data flow diagrams, entity-relationship models, and use cases.			13, 16, 2, 9	A, E, F		
5. Designs the outputs and inputs of an effective, accurate, and user-friendly system.			13, 16, 2, 9	A, E, F		
Teaching Methods	10: Discussion Method, 13: Case Study Method, 16: Question - Answer Technique, 2: Project Based Learning Model, 4: Inquiry-Based Learning, 9: Lecture Method					
Assessment Methods	A: Traditional Written Exam, E: Homework, F: Project Task					
Lecture Schedule						
Sequence	Topics	Preliminary Preparation				
1	Introduction to systems thinking and systems concepts	Lecture Notes				
2	Systems development life cycle (SDLC), agile and object-oriented systems development	Lecture Notes				
3	Identifying needs and objectives / Final project in-class discussion	Lecture Notes				
4	Project Management of systems development projects	Lecture Notes				
5	Modelling organizations and systems using context-level data flow diagrams, entity-relationship models, use cases, and use case scenarios.	Lecture Notes				
6	Interactive and unobtrusive information-gathering techniques	Lecture Notes				
7	Developing a system model using logical and physical Data-flow-diagrams (DFDs)	Lecture Notes				
8	Analyzing data-oriented systems using data dictionaries, data flows, data elements, data structures, and data repositories.	Lecture Notes				
9	Data governance, enterprise systems and virtual organizations.	Lecture Notes				
10	Designing effective system outputs.	Lecture Notes				
11	Designing effective system inputs	Lecture Notes				
12	Technology-based Systems / Innovation / Digital Age / Software based systems	Lecture Notes				
13	Final Project Presentations	Project Presentations				
14	Final Project Presentations	Project Presentations				
Evaluation Methods		Weight(%)				
Midterm Exam		30				
General Exam		70				

Resources	
Course Materials: Course notes, slides, readings (provided by the instructor)	
Textbook: Systems Analysis and Design; Kendall, Kenneth and Kendall Julie. Global (9th /10th) edition; The Second Machine Age by Erik Brynjolfsson, Andrew McAfee.	