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

2022 - 2023 Academic Year

INTRODUCTION to RISK ANALYSIS and MANAGEMENT

Syllabus

Course Description						
Name		**Code**	**Semester**	**T+A Hour**	**Credit**	**ECTS**
INTRODUCTION to RISK ANALYSIS and MANAGEMENT		IND4210794	Spring Semester	3+0	3	6
Prerequisites Courses	OLASILIK VE RASSAL DEĞİŞKENLER					
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 focuses on the risk analysis and management of engineering systems. Main focus will be on to understand the possible sources of risk and develop approaches to avoid complications due to unexpected events. Students will learn tools to analyze, measure the possibility of risk, and implement design alternatives to managing risk. Technological, organizational and financial risks will be covered and these topics will be supported by real-life examples and case studies.					
Course Content	This course contains; Introduction to general concepts of risk ,Risk, risk analysis and risk management definitions ,Risk Assessment ,Probabilistic Risk Assessment (PRA),Risk Management,Case study about risk assessment and risk analysis ,Case study about risk management ,Midterm Exam,Course project teams and topics ,Introduction to reliability and reliability engineering,Proactive and reactive approaches to risk, resilience engineering,Case study about resilience engineering ,Special topics: Financial risk management,Final Project Presentations,Final Project Presentations.					

Course Learning Outcomes	**Teaching Methods**	**Assessment Methods**
1. Understanding the concepts of risk, risk analysis and risk management through real life cases	1, 12, 16, 18, 3	A, C, D, E
2. To learn the concept of reliability and the fundamentals of reliability engineering	1, 12, 16, 18, 3	A, C, D, E
3. Learn the concept of proactive and reactive approaches to risk and the fundamentals of resilience engineering	1, 12, 16, 18, 3	A, C, D, E
4. Learn specific topics in risk management, including technological, financial and organizational risk management	1, 12, 18, 3	A, C, D, E
5. Understand the sources of risk and how they can design or redesign systems to eliminate or minimize the potential negative consequences of risk and catastrophic events	1, 12, 16, 18, 3	A, C, D, E

Teaching Methods	1: Lecture, 12: Case study, 16: Project Based Learning, 18: Case Study, 3: Discussion
Assessment Methods	A: Written Exam, C: Homework, D: Project / Design, E: Quiz

Lecture Schedule

Sequence	**Topics**	**Preliminary Preparation**
1	Introduction to general concepts of risk	
2	Risk, risk analysis and risk management definitions	
3	Risk Assessment	
4	Probabilistic Risk Assessment (PRA)	
5	Risk Management	
6	Case study about risk assessment and risk analysis	
7	Case study about risk management	
8	Midterm Exam	
9	Course project teams and topics	
10	Introduction to reliability and reliability engineering	
11	Proactive and reactive approaches to risk, resilience engineering	
12	Case study about resilience engineering	
13	Special topics: Financial risk management	
14	Final Project Presentations	
15	Final Project Presentations	

Evaluation Methods	**Weight(%)**
Midterm Exam	30
General Exam	70

Resources
Course notes, slides, readings (provided by the instructor) / Textbook: Reliability Engineering and Risk Analysis, Modarres and Kaminsky