

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

2022 - 2023 Academic Year

SPECIAL TOPICS in OPERATIONS RESEARCH

Syllabus

Course Description						
Name	Code	Semester	T+A Hour	Credit	ECTS	
SPECIAL TOPICS in OPERATIONS RESEARCH		IND4110793	Fall Semester	3+0	3	6
Prerequisites Courses	AĞ AKIŞLARI VE TAMSAYILI PROGRAMLAMA; STOKASTİK MODELLER					
Recommended Elective Courses						
Language of Instruction	English					
Course Level	First Cycle (Bachelor's Degree)					
Course Type	Elective					
Course Coordinator	Assoc.Prof. Yasin GÖÇGÜN					
Name of Lecturer(s)	Prof.Dr. Hakan TOZAN					
Assistant(s)						
Aim	Special topics in OR selected to suit the research interests of the faculty. Individual or small group studies of special areas of OR that fit into students' programs of study and which may not be covered by other OR courses. 2020-2021 Fall semester Operations Research Applications in Health Care Systems: Explores components of the healthcare system, existing problems in healthcare systems; application of industrial engineering tools in improving the healthcare system.					
Course Content	This course contains; INTRODUCTION TO HEALTH CARE (DELIVERY) SYSTEMS,INTRODUCTION TO INDUSTRIAL ENGINEERING IN HEALTH CARE DELIVERY SYSTEMS (Need for Industrial and Systems engineering tools in health care system modeling, design, and analysis),APPLICATIONS OF METHODS IMPROVEMENT AND WORK SIMPLIFICATION,APPLICATION OF STAFFING METHODOLOGIES,APPLICATION OF SCHEDULING METHODOLOGIES (Work Scheduling),APPLICATION OF SCHEDULING METHODOLOGIES (Personnel Scheduling),APPLICATION OF QUEUING AND SIMULATION METHODOLOGIES,APPLICATION OF QUEUING AND SIMULATION METHODOLOGIES,APPLICATION OF STATISTICAL METHODS,APPLICATION OF OPTIMIZATION MODELS,APPLICATION OF OPTIMIZATION MODELS,APPLICATION OF QUALITY IMPROVEMENT TOOLS,APPLICATION OF INFORMATION SYSTEMS/ DECISION SUPPORT TOOLS,APPLICATION OF OTHER INDUSTRIAL ENGINEERING TECHNIQUES,FUTURE TRENDS.					
Course Learning Outcomes			Teaching Methods	Assessment Methods		
2019-2020 Fall semester Industrial Engineering Applications in Health Care Systems: Students should be able to:- model, solve and analyze healthcare system problems using optimization and/or simulation tools; explain the complex interactions that exist in healthcare systems.			1, 14, 22, 3, 8, 9	A, D, E, F		
Teaching Methods	1: Lecture, 14: Self-Study, 22: -, 3: Discussion, 8: Teamwork, 9: Simulation					
Assessment Methods	A: Written Exam, D: Project / Design, E: Quiz, F: Performance task					
Lecture Schedule						
Sequence	Topics	Preliminary Preparation				
1	INTRODUCTION TO HEALTH CARE (DELIVERY) SYSTEMS					
2	INTRODUCTION TO INDUSTRIAL ENGINEERING IN HEALTH CARE DELIVERY SYSTEMS (Need for Industrial and Systems engineering tools in health care system modeling, design, and analysis)					
3	APPLICATIONS OF METHODS IMPROVEMENT AND WORK SIMPLIFICATION					
4	APPLICATION OF STAFFING METHODOLOGIES					
5	APPLICATION OF SCHEDULING METHODOLOGIES (Work Scheduling)					
6	APPLICATION OF SCHEDULING METHODOLOGIES (Personnel Scheduling)					
7	APPLICATION OF QUEUING AND SIMULATION METHODOLOGIES					
8	APPLICATION OF QUEUING AND SIMULATION METHODOLOGIES					
9	APPLICATION OF STATISTICAL METHODS					
9	APPLICATION OF OPTIMIZATION MODELS					
10	APPLICATION OF OPTIMIZATION MODELS					
11	APPLICATION OF QUALITY IMPROVEMENT TOOLS					
12	APPLICATION OF INFORMATION SYSTEMS/ DECISION SUPPORT TOOLS					
13	APPLICATION OF OTHER INDUSTRIAL ENGINEERING TECHNIQUES					
14	FUTURE TRENDS					
Evaluation Methods		Weight(%)				
Midterm Exam		30				
General Exam		70				

Resources
Healthcare Systems Engineering, Paul M. Griffin, Harriet B. Nembhard, Christopher J. DeFlicht, Nathaniel D. Bastian, Hyojung Kang, David A. Munoz, Wiley, 2016. (ISBN: 978-1-118-97108-6)