

ISTANBUL SEHIR UNIVERSITY
SYLLABUS
IE 324 - Simulation
2015 Fall Semester

Course Code	Course Name	Course Type	Weekly			Credits	ECTS	Weekly Class Schedule
			T	A	L			
IE 324 - Simulation	Simulation	Core	2	0	2	3	5	Wed 9:00-11:00 Fri 9:00-10:30 (Section A) 10:30-12:00 (Section B)
Prerequisite	ENGR 251/Probability for Engineers or with the consent of instructor							
Lecturer	Murat Kucukvar, PhD		Office Hours Schedule			By appointment		
E-mail	muratkucukvar@sehir.edu.tr							
Phone	9256		Office / Room No			Altunizade East (104)		
Course Objectives	This course aims to develop an effective systems analysis and simulation modeling skills for undergraduate students. After successful completion of the course, students will be able to (a) understand the principals of simulation modeling (b) learn how to generate random numbers and analyze the input data (c) develop static and dynamic simulation models (d) use the SIMIO, SPSS and Input Analyzer software for real simulation problems and finally (e) work with teams to analyze the systems, build complex simulation models, conduct experiments and analyze outputs.							
Textbook	Simulation Modeling and Analysis, Fifth Edition Averill M. Law, Ph.D. McGraw-Hill, 2015, 804 pages.							
Learning Outcomes	After successful completion of the course, the student will be able to:							
	1	understand the fundamentals of systems simulation and its applications						
	2	use the SIMIO software for real simulation projects						
	3	learn the principles of input and output data analysis and conduct experiments						
	4	develop effective team work, field research, report writing, communication and presentation skills.						
Teaching Methods	Class discussions with examples. Active tutorial sessions for engaged learning and continuous feedback on progress. Team assignments, and a term project conducted in a real organization will help students acquire the skills intended.							
WEEK	TOPIC						REFERENCE	
Week 1	Introduction to simulation						Lecture Notes	
Week 2	Probability and statistics, random number generation and input analysis						Lecture Notes	
Week 3	Monte carlo simulation and basics of queuening theory						Lecture Notes	
Week 4	First simulation (Simio) model and software tutorial						Lecture Notes	
Week 5	MIDTERM EXAM							
Week 6	Modeling the serial manufacturing systems						Lecture Notes	
Week 7	Entity routing and routing with sequences						Lecture Notes	
Week 8	Simulation tables and working with external data						Lecture Notes	
Week 9	Simulation with vehicles and conveyors						Lecture Notes	
Week 10	Modeling with user defined statistics and SIMIO processes/add-on processes						Lecture Notes	
Week 11	Simulation-based optimization and animation						Lecture Notes	
Week 12	Term Project Presentations							
Week 13	Term Project Presentations							
Week 14	FINAL EXAM							
Assessment Methods and Criteria	Evaluation Tool		Quantity	Weight (%)				
	Final Exam		1	40				
	Semester Evaluation			60				
	Midterm Exam		1	20				
	Term Project (team work)		1	20				
	Quizes & Assignments		4	10				
	Labs		6	10				
*** ECTS Credit Calculation ***						Language of Instruction: English		
Activity	Hours	Weeks	Student Workload Hours	Activity	Hours	Weeks	Student Workload Hours	
Lecture hours	4	14	56.0	In-term exam study	10	1	10.0	
Labs	4	6	24.0	Final exam study	12	1	12.0	
Term project	10	2	20.0	Assignments	2	4	8.0	
Total Workload Hours =							130.0	
Recommended ECTS Credit =							5	