YEDİTEPE UNIVERSITY
FACULTY OF ENGINEERING

COURSE DESCRIPTION FORM
2019/2020-1

COURSE INFORMATON				
Course Code		**Course Title**		
Semester	*Credits*	*ECTS*	*C +P + L Hour*	Prerequisites
6	**3**	**6**	**2 + 0 + 2**	**ISE 102**

Language of Instruction	**Course Level**	**Course Type**
English	Undergraduate	Core

Course Coordinator	
Instructors	Assist. Prof. Eylül Damla Gönül Sezer
Assistants	Alper YILDIZ
Goals	The aim of this course is to understand the basic definitions and descriptions of systems modeling,and to be able to conduct system requirement analysis. At the end of this course students will be able to develop model based system design.
Content	This course introduces the systems engineering design and integration process, including the development of functional, physical, and operational architectures. The emphasis of this course is on requirements engineering, functional modeling for design, formulation and analysis of physical design alternatives, verification and validation. The course is designed to provide students with experience using mathematical and graphical tools for systems analysis and control, testing and evaluation. Methods and software tools for systems engineering are introduced.
Contribution of the Course to the Professional Education	Course enables students to understand and apply model-based system design methodology.

Course Learning Outcomes	**Detailed Program Outcomes**	**Teaching Methods**	**Assessment Methods**
1) Adequate knowledge in functional system modelling	1a,1b,3a,3b,6a, 6b	1,2,3	A,F,G,H
2) Ability to use graphical tools for modelling.	1a,1b,4a,4b	1,2,4	A,F,G,H

3) Adequate knowledge in developing operational architecture.	1b,6a,6b	1,2,3,4	A,F,G,H

Teaching Methods:	1: Lecture by instructor, 2: Lecture by instructor with class discussion, 3: Problem solving by instructor, 4: Use of simulations, 5: Problem solving assignment, 6: Reading assignment, 7: Laboratory work, 8: Term research, 9: Presentation by guest speaker, 10: Sample project review, 11: Interdiciplinary group working
Assessment Methods:	A: Written exam, B: Multiple-choice exam, C: Take-home quiz, D: Experiment report, E: Homework, F: Project, G: Report by student, H: Presentation by student.

COURSE CONTENT

Week	Topics	Study Materials
1	Introduction to Systems Engineering a) Systems Terminology b) Overview of the system engineering design process	Text Books and Lecture Notes
2	Requirements Analysis	Text Books and Lecture Notes
3	Requirements Analysis	Text Books and Lecture Notes
4	System Concept and Design Process	Text Books and Lecture Notes
5	Functions of Design Process	Text Books and Lecture Notes
6	Midterm	Text Books and Lecture Notes
7	Functions of Design Process	Text Books and Lecture Notes
8	Integration and Evaluation	Text Books and Lecture Notes
9	Graphical Modeling Techniques	Text Books and Lecture Notes
10	Graphical Modeling Techniques	Text Books and Lecture Notes
11	Decision Support Systems	Text Books and Lecture Notes
12	Verification and Validation	Text Books and Lecture Notes

13	Project Presentations	Text Books and Lecture Notes
14	Project Presentations	Text Books and Lecture Notes

RECOMMENDED SOURCES	
Textbook	Course Notes per e-mail
Additional Resources	Engineering Design of Systems – Dennis Buede Wiley, 2000

MATERIAL SHARING	
Documents	Powerpoint slides
Assignments	System Design Project
Exams	Midterms, Final

ASSESSMENT		
IN-TERM STUDIES	**NUMBER**	**PERCENTAGE**
Mid-terms	1	55
Term Project	1	45
Total		**100**
CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE		35
CONTRIBUTION OF IN-TERM STUDIES TO OVERALL GRADE		65
Total		**100**

COURSE CATEGORY	Field Course

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES		
No	Program Learning Outcomes	check √
1a	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline,	√

1b	Ability to use theoretical and applied knowledge in these areas in complex engineering problems.	√
2a	Ability to identify, formulate, and solve complex engineering problems,	
2b	Ability to select and apply proper analysis and modeling methods for this purpose.	
3a	Ability to design a complex system, process, device or product under realistic constraints and conditions, in such a way as to meet the desired result,	√
3b	Ability to apply modern design methods for this purpose.	√
4a	Ability to devise, select and use modern techniques and tools needed for analyzing and solving complex problems encountered in engineering practice.	√
4b	Ability to employ information technologies effectively.	
5a	Ability to design experiments for investigating complex engineering problems or discipline specific research questions,	
5b	Ability to conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.	
6a	Ability to work efficiently in intra-disciplinary teams,	√
6b	Ability to work efficiently in multi-disciplinary teams,	√
6c	Ability to work individually.	
7a	Ability to communicate effectively in Turkish, both orally and in writing,	
7b	Knowledge of a minimum of one foreign language,	
7c	Ability to write effective reports and comprehend written reports, prepare design and production reports,	
7d	Ability to make effective presentations,	
7e	Ability to give and receive clear and intelligible instructions.	
8a	Recognition of the need for lifelong learning, ability to access information, ability to follow developments in science and technology,	
8b	Ability to continue to educate him/herself.	
9a	Consciousness to behave according to ethical principles and professional and ethical responsibility.	
9b	Knowledge on standards used in engineering practice.	
10a	Knowledge about business life practices such as project management, risk management, change management.	
10b	Awareness in entrepreneurship and innovation.	
10c	Knowledge about sustainable development.	
11a	Knowledge about the global and social effects of engineering practices on health, environment, and safety,	

11b	Knowledge about contemporary issues of the century reflected into the field of engineering.	
11c	Awareness of the legal consequences of engineering solutions.	

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Course Duration (Excluding the exam weeks: 12x Total course hours)	12	4	48
Hours for off-the-classroom study (Pre-study, practice)	14	4	56
Midterm examination	1	2	2
Project	1	35	35
Final examination	1	3	3
Total Work Load			144
Total Work Load / 25 (h)			**5,7**
ECTS Credit of the Course			6

Prepared by: Dr. Eylül Damla Gönül Sezer	Preparation date: 20.10.2019