

**DEPARTMENT of INDUSTRIAL ENGINEERING  
COURSE CATALOGUE FORM**



<b>Course Code:</b> INDE4181				<b>Course Title:</b> Reliability Analysis			
<b>Semester</b>	<b>L + R + L</b>	<b>Credits</b>	<b>AKTS</b>	<b>Language</b>	<b>Category</b>	<b>Instructional Methods</b>	<b>Prerequisites</b>
8	3 + 0 + 0	3	6	English	Elective	Lecture	MATH2201
<b>Course Objectives</b>			To give the students the theoretical background on reliability analysis and to gain knowledge on the current applications of it for products and systems related to different engineering areas.				
<b>Course Content</b>			Introduction to reliability engineering, failure rates and distribution, hazard function; component and system level reliability; failure data analysis; load and capacity; redundancy; risk and safety.				
<b>Course Learning Outcomes</b>			Students, who pass the course satisfactorily: 1. Ability to perform reliability modeling in physical and service systems. [2] 2. Ability to analyze and validate the real life scale failures on physical and service systems by applying statistical methods. [2]  <i>[Note: Numbers in brackets are indicating the related program outcomes]</i>				
<b>ISCED Category of the course</b>			52 Engineering				
<b>Textbook</b>			Introduction to Reliability Engineering - E.E. Lewis				
<b>Supplementary Material</b>			Practical Reliability Engineering - P.O'Connor				

**COURSE PLAN**

Week	Topics	Laboratory / Tutorial Work
1	Fundamental concepts in reliability engineering	-
2	Statistical Quality and Reliability	-
3	Reliability mathematics	-
4	Reliability and rates of failure	-
5	Failure Models	-
6	Analysis of failure Data	-
7	Analysis of failure Data	-
8	Reliability testing	-
9	Load and strength analysis	-
10	Load and strength analysis	-
11	Redundancy	-
12	Redundancy	-
13	Risk assessment	-
14	Recent advances and discussion	-

**COURSE ASSESSMENT SYSTEM**

	Activities	Contribution (%)
<b>Semester Activities</b>	<b>Semester Written Exams</b>	40
	<b>Homework</b>	-
	<b>Reports</b>	-
	<b>Labs</b>	-
	<b>Seminars</b>	-
	<b>Presentations</b>	-
	<b>Term Project</b>	15
	<b>Other (attendance, field trip etc.)</b>	5
<b>FINAL EXAM</b>		40
<b>Total</b>		100

**CONTRIBUTION of the COURSE on INDUSTRIAL ENGINEERING PROGRAM OUTCOMES**

	Program Outcomes	Low	High
1	Adequate knowledge in mathematics, science and subjects pertaining to Industrial Engineering; ability to use theoretical and applied knowledge in these areas in complex engineering problems.		
2	Ability to identify, formulate, and solve complex Industrial Engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.		X
3	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; ability to apply modern design methods for this purpose.		
4	Ability to devise, select, and use modern techniques and tools needed for analyzing and solving problems encountered in engineering practice; ability to employ information technologies effectively.		
5	Ability to design and conduct experiments, gather data, analyze and interpret results for investigating complex engineering problems or discipline specific research questions.		
6	Ability to work efficiently individually and in intra-disciplinary / multi-disciplinary teams.		
7	Knowledge of Turkish and English languages; ability to communicate effectively orally, inscriptive and visually by using these languages (via business methods such as reports, presentations and instructions).		
8	Recognition of the need for lifelong learning; ability to access information, to follow developments in science and technology, and to continue to educate him/herself.		
9	Consciousness to behave according to ethical principles and professional and ethical responsibility; knowledge on standards used in engineering practice.		
10	Knowledge about business life practices (management activities such as project, risk, change and quality etc.); awareness in entrepreneurship, innovation; knowledge about sustainable development.		
11	Knowledge about the global and social effects of engineering practices on health, environment, economics and safety, and contemporary issues of the century reflected into the field of engineering; awareness of the legal consequences of engineering solutions.		

**ECTS - WORK LOAD TABLE**

COURSE ACTIVITIES	Quantity	Time (hr)	Work Load (hr)
Lectures	14	3	42
Final Exam (Preparation included)	1	20	20
Semester Written Exams (Preparation included)	2	15	30
Out of class study time	12	3	36
Homework	-	-	-
Reports	-	-	-
Labs	-	-	-
Seminar	-	-	-
Presentations	-	-	-
Term Project	1	20	20
<b>Total Load (hr)</b>			148
<b>ECTS Credits of the course (Total Work Load / 25)</b>			6

Revizyon/Tarih 5/02/2020	Koordinatör / HAZIRLAYAN Çağlar Aksezer	ONAYLAYAN Çağlar Aksezer
-----------------------------	--	-----------------------------