DEPARTMENT of INDUSTRIAL ENGINEERING
COURSE CATALOGUE FORM

Course Code: INDE2211				**Course Title**: Industrial Production Systems			
Semester	**L + R + L**	**Credits**	**AKTS**	**Language**	**Category**	**Instructional Methods**	**Prerequisites**
3	3+0+0	3	6	English	Required	Lecture	-

Course Objectives	The planning of production systems, production line design, capacity and cost planning, design and analysis capabilities of storage and transfer systems.
Course Content	Basics of manufacturing and production systems. Production speed, capacity. Resource utilization and machine availability. Amount of work under processing, delivery time. Production types, workshop, stack, serial line balancing systems. Process-based and product-based placement approaches. Basic tool routing and storage systems designs. Basic time and work study principles.
Course Learning Outcomes	Students, who pass the course satisfactorily: 1. Classify production systems. [2] 2. Analyze manufacturing and production support systems with appropriate methods. [2] 3. Collect data to analyze manufacturing and production systems. [2] 4. Choose the right approach for material handling / handling and storage / drawing. [2] 5. Execute basic work and time study to establish standard work times and improvement. [2] [*Note: Numbers in brackets are indicating the related program outcomes*]
ISCED Category of the course	52 Engineering
Textbook	Automation, Production Systems, and Computer-Integrated Manufacturing (3rd edition); Groover, Prentice Hall Publishing, 2007
Supplementary Material	Factory Physics (3rd edition); Spearman and Hopp, McGraw Hill, 2008 Motion and Time Study: Design and Measurement of Work (7th Ed.), Ralph M. Barnes, Wiley, 1980

COURSE PLAN

Week	Topics	Laboratory / Tutorial Work
1	Systems of production systems	
2	Manufacturing Support Systems	
3	Automation principles	
4	Manufacturing operations and product / production relations and models	
5	Line balancing problem and single row assembly line modeling	
6	Line balancing problem and solution methods	
7	Fundamentals of material management systems	
8	Material transmission systems - Automated vehicle systems	
9	Material transmission systems - Conveyor systems	
10	Traditional methods and strategies of material storage systems	
11	Material storage systems - Automatic storage and retrieval systems	
12	Material storage systems - Rotary storage systems	
13	Work Study - Motion Analysis	
14	Work Study - Time analysis and business sample	

COURSE ASSESSMENT SYSTEM

	Activities	Contribution (%)
Semester Activities	**Semester Written Exams**	60
	Homework	10
	Reports	-
	Labs	-
	Seminars	-
	Presentations	-
	Term Project	-
	Other (attendance, field trip etc.)	-
FINAL EXAM		30
Total		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	25	25
Semester Written Exams (Preparation included)	5	6	30
Out of class study time	14	2	28
Homework	8	3	24
Reports			
Labs			
Seminar			
Presentations			
Term Project			
Total Load (hr)			149
ECTS Credits of the course (Total Work Load / 25)			6

Revision / Date	Coordinator / Prepared By	Approved By
5/02/2020	Çağlar Aksezer	Çağlar Aksezer