	PRODUCTION SYSTEMS							
1	Course Title:	PRODU	CTION SYSTEMS					
2	Course Code:	END5110						
3	Type of Course:	Optional						
4	Level of Course:	Second Cycle						
5	Year of Study:	1						
6	Semester:	2						
7	ECTS Credits Allocated:	7.50						
8	Theoretical (hour/week):	3.00						
9	Practice (hour/week):	0.00						
10	Laboratory (hour/week):	0						
11	Prerequisites:	None						
12	Language:	Turkish						
13	Mode of Delivery:	Face to f	ace					
14	Course Coordinator:	Prof. Dr.	ERDAL EMEL					
15	Course Lecturers:							
16	Contact information of the Course Coordinator:	erdal@uludag.edu.tr Tel: 0224 294 2080 Endüstri Mühendisliği Bölümü, Mühendislik Mimarlık Fakültesi Bursa Uludağ Üniversitesi, Görükle, Bursa						
17	Website:	http://endustri.uludag.edu.tr						
18	Objective of the Course:	This course aims to teach an engineering approach to the design of production systems in terms of flow modeling and its mathematical representation. Lean manufacturing systems in terms of flow modeling and mathematical notation in terms of integer programming models are the main materials of the course. Throughout the course lectures with the purpose of developing students' skills practical assignments and project work of system modeling and optimization will be covered.						
19	Contribution of the Course to Professional Development:	Efficient and efficient operation of production systems for product or service production depends primarily on their being designed in a flow order with the most appropriate structure for the purpose. This design requires a selection among alternative flow patterns and determination of the most appropriate design parameters for the chosen model. In this direction, the aim of the course is, To introduce students to in-depth modeling and analysis of work flow dynamics that shape the functioning and performance of contemporary production systems, To give students the experience of using their stochastic modeling and analysis infrastructures in practical problems and applications, To teach students not only the specific models and algorithms covered in the course, but also the thinking processes and broader methodology underlying the development of the results presented The course is primarily to apply the subjects to all other areas that involve a structured workflow in healthcare and similar service industries, while operating through applications taken from the manufacturing field.						
20	Learning Outcomes:							
		1	 Gain the ability to define strategies and basic concepts of production systems 					
		2 The ability to define the role of production systems within the company's business strategies						
		3 Ability to explain the effects operating efficiency of production systems and strategies						

		4	To be adequately equipped in designing the most suitable production systems and processes, compatible with business management objectives						
		5	TI or	he ability of conducting n process analysis	business and time	studies based			
		6							
		7							
		8							
		9							
		10							
21	Course Content:								
		Co	ur	rse Content:					
Week	Theoretical		Ρ	ractice					
1	Introduction to Production Systems, I Probability Review	Basic							
2	Basic Probability Review								
3	Introduction to Factory Models								
4	Single Workstation Factory Models								
5	Processing Time Variability, Multiple- Single-Product Factory Models	Stage							
6	Multiple-Stage Single-Product Factor	y Models							
7	Multiple Product Factory Models								
Activit	es			Number	Duration (hour)	Total Work Load (hour)			
	tical			14	3.00	42.00			
Practica	als/Labs			0	0.00	0.00			
Self Stu	dy and preperation			14	7.00	98.00			
Homew	vorks			2	3.00	6.00			
Project	S			2	38.00	76.00			
Field St	tudies			0	0.00	0.00			
Midtern	nviateriais: n exams		IV T	odeling and Analysis	(2ng ed.), Springer D. T. Jones, Sisten	2011Lean 0.00 1 Yavıncılık.			
Others				0	0.00	0.00			
Final E	kams		Б G	Aksin. Jeffrev B. Gold	2 00 Berg. John Wiley a	stenis, Ronald nd Sons. 2002.			
Total W	/ork Load					224.00			
Total w	ork load/ 30 hr		P	roduction Planning by	Mixed Integer Prog	7,60 amming, Yves			
ECTS (Credit of the Course		1177		mancar Prooramm	7.50			
				Williams, John Wiley and Sons, 2005. Applied Integer Programming: Modeling and Solution, Der- San Chen, R. G. Batson, Y. Dang, John Wiley and Sons, 2010.					
23	Assesment		_						
TERM L	EARNING ACTIVITIES	NUMBE R	W	EIGHT					
Midterm Exam 0			0.00						
Quiz 2			30.00						
Home work-project 3			30.00						
Final Exam 1			40.00						
Total 6				100.00					

Contribution of Term (Vear) Learning Activities to							60	00								
Success Grade								60.	60.00							
Contribution of Final Exam to Success Grade								40.	40.00							
Total								10	100.00							
Measurement and Evaluation Techniques Used in the Course							ne Ass ass	Assessmente of knowledge and skills through exams and assignments								
24 EC	CTS /	WO	RKL	OAD	TAB	LE										
25 CONTRIBUTION OF LEA								ARN QUA	RNING OUTCOMES TO PROGRAMME UALIFICATIONS							
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ1 0	PQ11	PQ12	PQ1 3	PQ14	PQ15	PQ16
ÖK1	0	4	3	0	5	0	0	3	4	0	3	4	5	0	0	0
ÖK2	5	3	0	3	0	0	0	4	0	0	0	4	0	3	0	0
ÖK3	5	3	4	3	0	0	0	0	4	0	0	5	0	0	0	0
ÖK4	5	4	4	3	0	0	0	3	0	0	0	0	3	0	0	0
ÖK5	3	4	0	0	0	0	0	4	5	0	0	0	4	0	0	0
						N	1						1		-	

LO: Learning Objectives PQ: Program Qualifications									
Contrib ution Level:	1 very low	2 low	3 Medium	4 High	5 Very High				