



SYLLABUS

Metallurgical and Materials Engineering

2017-2018 Spring Semester

Course Code	Course Name	Course Type	Weekly Course Hours			Credits	ECTS	Weekly Time & Classroom Schedule
			T	A	L			
MSE4074.1/474.1	Materials Engineering Economics and Plant Design	FTE (Faculty technic elective)	3	0	0	5	5	
Prerequisite		Prerequisite to						
Course Lecturer		Lecturer Aslan ÜNAL			Office Hours Schedule			
E-mail					Office / Room No			
Phone					Phone		5324561380	
Teaching Assistant(s)					Office / Room No			
E-mail								
Course Objectives		The aim of this course is to use metallurgical and economical principle while designing a metallurgical and materials engineering plant.						
Learning outcomes		1. To have the ability to take the final decision 2. To recognize alternative investment tools and control 3. To be able to solve real investment problems 4. To have the knowledge the alternative investment tools						
Textbooks and/or References		1. Engineering Economy, William G. Sullivan, Elin M. Wicks, James T. Luxhoj, Prentice Hall Company, Twelfth edition, 2003						
Teaching methods		Lecture Notes, Powerpoint Presentations, Problem Solving, Project, Assignments						
WEEK	Date	TOPICS					Reference No - Section	
Week 1		Methodology for executing a project initiative on an industrial scale						
Week 2		Material and Metallurgical Factory; Basic concepts of cost structures and engineering economics						
Week 3		Principles of equipment layout and site selection for Materials and Metallurgy Factories						
Week 4		Amortization concept, forecast and integration cash flow						
Week 5		Working capital investment and production total cost estimation						
Week 6		Estimation of potential market volume and determination of production capacity						
Week 7		Midterm study week						
Week 8		Midterm						
Week 9		Existing production technologies and their comparison in selection						
Week 10		Determination of baseline conditions for design						
Week 11		Estimation of fixed capital investment						
Week 12		Money investment, interest and time value concepts						
Week 13		Profitability analysis						
Week 14		Alternative investment and renewal analysis						
Week 15		Effects of a project on economy, inflation and other uncertainties						
Week 16		Basics of product design						
Week 17		Final exam						
Evaluation Tools		Evaluation Tool	Quantity	Date	Weight in Total (%)	Weight in Semester Evaluation (%)		
		Final Exam	1	--	40	0		
		Final Make-up Exam (if exists)	1	--	40	0		
		Semester Evaluation			60	100		
		Midterm(s)	1	--	30	50,0		
		Quiz(ze)s			--			
		Project(s)	1	--	30	50,0		
		Homework(s)	0	--	0	0,0		
		Laboratory	0	--	0	0,0		
Other	0	--	0	0,0				
Program and Learning Outcome Relations		No	Program Outcomes			Relations		
		1	Sufficient accumulation of knowledge in mathematics, natural sciences and their own field, ability to apply theoretical and applied knowledge to model and solve engineering problems in this field.					
		2	Ability to determine, identify, formulate and solve complex engineering problems: capability of choosing and applying appropriate analysis and modeling methods.					
		3	Ability to design a complex system, process device or product to meet certain requirements under realistic constraints and conditions: ability to apply modern design methods for this purpose. (Depending on the design: realistic constraints and conditions may include elements such as economics, environmental problems, sustainability, feasibility, ethics, health, safety, social and political problems.)			X		
		4	Ability to develop, select and utilize modern tools and techniques needed for engineering applications: ability to use information technologies effectively.					X
		5	Ability to design and conduct experiments, gather data, analyze and interpret results to investigate engineering problems.					
		6	Ability to work effectively in intra- and inter-disciplinary teams: individual work capability.					X
		7	Effective verbal and written communication skills in Turkish; knowledge of at least one foreign language.			X		
		8	Conscience of necessity of lifelong learning, ability to access knowledge, follow developments in science and technology, and continuous self-improvement.			X		
		9	Conscience of professional and ethical responsibilities.			X		
		10	Knowledge about business applications such as project management, risk management and change management: awareness of entrepreneurship, innovation and sustainability.			X		
		11	Knowledge about universal and social effects of engineering applications on health, environment and safety; awareness about legal consequences of engineering applications.			X		
*** Lifelong Learning Programme (LLP) ***					Language of Instruction: English			
Evaluation Tool	Quantity	Student Workload Hours		Evaluation Tool	Quantity	Student Workload Hours		
Theoretical Hours	--	42		Applied Hours				
Midterm	1	15		Final	1	30		
Quiz	2	6		Project	1	8		
Laboratory				Homework				
Atelier				Seminar				
Field Study				Presentation	1	4		
Other				Self Study	16	10		
				TOTAL:	22	115,00		
				Recommended ECTS Credit (Total Hours 125/25):			5	
				1: weak, 2: moderate, 3: strong				