

SELF STUDY REPORT APPENDIX A COURSE SYLLABUS

Course Name Production Processes						
Code	Semester	Local Credits	ECTS Credits	Course Implementation, Hours/Week		
				Theoretical	Tutorial	Laboratory
MET 372	VI	3	4	3	-	-
Department/Program		Metallurgical and Materials Engineering				
Course Type		Required materials ops/elective metallurgy ops		Course Language		Turkish
Course Prerequisites		None				
Course Category by Content, %		Basic Sciences	Engineering Science	Engineering Design	General Education	
		-	30	70		
Course Description		The aim of the Manufacturing Processes course is to disseminate general engineering manufacturing knowledge to students by including topics of powder metallurgy, welding metallurgy and machining techniques. Introducing manufacturing methods in order to have industrial final-products with desired specifications. Representing the advantages and the disadvantages of the manufacturing methods. To make the selection of the manufacturing method considering the quality-cost-environment. Also to make this selection in consideration with product requirement, material, process and product selection.				
Course Objectives		A student will be able to; <ol style="list-style-type: none"> define the manufacturing process indicate the main goals in manufacturing organisation define the principles of value- added define a manufacturing system define the main manufacturing systems and their functional characteristics. define the main process strategies and correlate them with main manufacturing systems. put forward the material selection towards manufacturing requirements and selection criteria of manufacturing methods in that manner. have knowledge about current manufacturing technologies and their advantages&disadvantages. gain knowledge to compare the manufacturing methods and evaluate the results. designate the role and responsibilities of the manufacturing engineer. 				
Course Learning Outcomes		I. To have knowledge on manufacturing method selection considering foreseen final industrial product specifications. II. To have knowledge on the evaluation of material-product specification-manufacturing method relations. III. To have knowledge on the relations between manufacturing method-quality-cost and environment. IV. To have knowledge on manufacturing equipments and advancing technology. V. Having fundamental knowledge about casting, plastic forming, machining, powder metallurgy, heat treatment, surface treatment and welding technologies.				
Textbook		<ul style="list-style-type: none"> Product Design For Manufacture And Assembly (Manufacturing Engineering And Materials Processing) Geoffrey Boothroyd, Peter Dewhurst, Winston Knight Marcel Dekker 2002 Manufacturing Engineering And Technology (4th Edition) Serope Kalpakjian And Steven R. Schmid 2008 DeGarmo's Materials and Processes in Manufacturing E. Paul DeGarmo (Author), J T. Black (Author), Ronald A. Kohser (Author) 2004 				
Other References		<ul style="list-style-type: none"> Randall M. German, "Powder Metallurgy Science", Metal Powder Industries Federation, Princeton, NJ, 1994. H. B. Howard, "Modern Welding Technology", Prentice-Hall, 1989. K. Tülbentçi, E. Kaluç, Sarı, "Talaşlı İmalat Ders Notları", Kocaeli Üniversitesi, 1991. 				
Homework & Projects		Short homeworks, One mid term Project, One final project				
Laboratory Work						
Computer Use		- None/ Hands on experience on Word, Excel, Powerpoint, Visio.				
Other Activities						
Assessment Criteria		Activities		Quantity	Effects on Grading, %	
		Midterm Exams		-	-	
		Quizzes		-	-	
		Homework		1-2	10	
		Projects		1	35	
		Term Paper/Project		1	45	
		Laboratory Work		-	-	
		Other Activities		-	-	
		Final Exam		-	-	

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COURSE PLAN

Weeks	Topics	Course Outcomes
1	Introduction to manufacturing methods, quality-cost-environment triangle	I-II-III
2	Classification of manufacturing methods, measuring and evaluation	I-II-III
3	Material selection for product	I-II-III
4	The relation between material selection-manufacturing process	I-II-III
5	Casting and plastic forming technologies	IV-V-VI
6	Machining technologies	IV-V-VI
7	Heat treatment technologies	IV-V-VI
8	Surface treatment technologies	IV-V-VI
9	Powder metallurgy and technology	IV-V-VI
10	Joining technologies, definition of welding and metallurgical principles	IV-V-VI
11	Welding technology and developments	I-II-III-IV-V-VI
12	PRESENTATIONS	I-II-III-IV-V-VI
13	PRESENTATIONS	I-II-III-IV-V-VI
14	PRESENTATIONS	I-II-III-IV-V-VI

Relationship between the Course and Metallurgical and Materials Engineering Curriculum

	Program Outcomes	Level of Contribution		
		1	2	3
1	Ability to apply the knowledge of mathematics, science and engineering principles to solve problems in metallurgical and materials engineering (ABET:a)	X		
2	Ability to characterize materials using standard and/or self designed experimental methods and to evaluate the results (ABET:b)			
3	Ability to design a system or a process, taking into consideration of the desired specifications, quality, ethics and environment. (ABET:c)		X	
4	Ability to communicate both orally and in the written form and to take part in, and provide leadership of the teams in the elucidation of engineering problems; (ABET:d, g)			X
5	Ability to define, formulate and solve engineering problems in the development, production, processing, protection and usage of engineering materials. (ABET:e)			X
6	An understanding of professional and ethical responsibilities(ABET:f)			
7	An understanding of current/contemporary issues and impact of engineering solutions in broad cultural, national and global levels;. (ABET:h, j)	X		
8	A comprehension of the nature of engineering progress closely linked with the development of new materials and production processes. An ability to engage in life-long learning and a recognition of its necessity (ABET:i)		X	
9	Ability to use essential tools and techniques of modern engineering in the development, production, processing, protecting and surface treatment of the existing and new engineering materials. (ABET:k)			X

1: Little, 2. Partial, 3. Full

Course relationships with major elements of the field and material classes

		Level of Contribution		
		1	2	3
MAJOR ELEMENT OF THE FIELDS	STRUCTURE	x		
	PROPERTIES		x	
	DESIGN EXPERIMENT/ANALYSE DATA	x		
	PROCESSING			x
	COST/PERFORMANCE			x
	QUALITY/ENVIRONMENT			x
MATERIAL CLASSES	DESIGN PROCESS OR PRODUCT			x
	METAL			x
	CERAMICS		x	
	POLYMERS		x	
	COMPOSITES		x	

1: Little, 2. Partial, 3. Full

Prepared by Prof. Dr. Yilmaz Taptık	Date 20.12.2009	Signature
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