Course Name						
INTRODUCTION TO METALLURGY AND MATERIALS ENGINEERING AND ENGINEERING ETHICS						
Code	**Semester**	**Local Credits**	**ECTS Credits**	**Course Implementation, Hours/Week**		
				Theoretical	**Tutorial**	**Laboratory**
MET101E	1	2	2	2	-	-

Department/Program	Metallurgical and Materials Engineering		
Course Type	Required	**Course Language**	ENGLISH
Course Prerequisites	None		

Course Category by Content, %	**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
		30	30	40

Course Description	This course provides an introductory information to students; • how we define engineer, engineering ethics and responsibility • in what sectors metallurgical and materials engineers needed, • what does a metallurgical and materials engineer do, • what is the situation in Turkey and in the world as far as metallurgical and materials engineering education is concerned • opportunities in metallurgical and materials engineering and science in this course students meet with sector leaders (manager, general managers) in order to learn about career developments in this field
Course Objectives	1. To introduce the all fields and concepts of metallurgical and materials engineering 2. To introduce the work opportunities in metallurgical and materials engineering and to have knowledge on the future opportunities in metallurgical and materials engineering 3. To learn about basic concepts of metallurgical and materials engineering and to inform the students on application areas of metallurgical and materials engineering 4. To know metallurgical& materials production technologies 5. Gaining the ability of moral reasoning and practical wisdom. 6. Developing the ability to think theoretically and conceptually. 7. Developing the ability to communicate and discuss issues effectively. 8. Developing the ability to read and understand texts, make research and write. 9. Developing the capacity to locate and evaluate engineering problems in their social contexts. 10. To inform students on engineering ethics and responsibility
Course Learning Outcomes	Students who pass the course will be able to: 1. Learn metallurgical and materials engineering 2. Have knowledge on contemporary issues on metallurgical and materials engineering in Turkey and in the world. 3. Learn career opportunities in this field 4. To be familiar with basic concepts, technologies, terms of metallurgical and materials science, 5. Comprehend their basic ethical responsibilities and develop a professional ethic, 6. Think theoretically and conceptually, 7. Communicate and discuss issues effectively, 8. Read and understand texts, make research and write, 9. Locate and evaluate engineering problems in their social contexts 10. Understanding of professional and ethical responsibilities
Textbook	• Hand outs, • Presentations (presented by sector leaders)
Other References	
Homework & Projects	
Laboratory Work	
Computer Use	
Other Activities	

Assessment Criteria	**Activities**	**Quantity**	**Effects on Grading, %**
	Midterm Exams		
	Quizzes		
	Homework	**2(MAX)**	**25**
	Projects	**1**	**35**
	Term Paper/Project	**1**	**40**
	Laboratory Work	**-**	**-**
	Other Activities	**-**	**-**
	Final Exam	**-**	**-**

COURSE PLAN

Weeks	Topics	Course Outcomes
1	Introducing metallurgical and materials engineering; definition and interest areas	1,2,3
2	Introducing the outcomes and goals of ITU Metallurgical and materials engineering education	1, 2, 3,4
3	Introduction to ethics, ethical theories, Engineerings ethics	5, 10
4	Ethics and institutions, Professional Models, Engineering responsibility	5,6,10
5	Loyalty in engineering. Research ethics, Scientific misconduct	5,6,7
6	Honesty at workplace, Ethical solutions to the problems, Metallurgical Materials production technologies, Environment and ethics.	5,6,7,8,9
7	Integration and relation between metallurgy and materials as concepts and introducing their area of interests	1, 2
8	Production methods and metallurgical and materials engineering	1,2
9	Future opportunities in metallurgical and materials engineering	2,3
10	Introducing as a concept of materials characterization	1,4
11	A case study :Industrial production presentation by a sectoral leader	1-10
12	A case study :Industrial production presentation by a sectoral leader	1-10
13	A guest as a role model	1-10
14	A guest as a role model	1-10

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)	X		
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)			x
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 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**	
	DESIGN PROCESS OR PRODUCT		**x**	
MATERIAL CLASSES	METAL		**x**	
	CERAMICS		**x**	
	POLYMERS		**x**	
	COMPOSITES		**x**	

1: Little, 2. Partial, 3. Full

Prepared by	Date	**Signature**
Department Chair	March, 2013	