Course Name						
CASTING PROCESSES						
				Course Implementation, Hours/Week		
Code	**Semester**	**Local Credits**	**ECTS Credits**	**Theoretical**	**Tutorial**	**Laboratory**
MET472E	8	2	4	2	0	0

Department/Program)	Metallurgical and Materials Engineering		
Course Type	Elective	**Course Language**	English
Course Prerequisites	None		

Course Category by Content, %	**Basic Sciences**	**Engineering Science**	**Engineering Design**	**General Education**
		20%	80%	

Course Description	The general view of Turkish and world casting industry, Melting technics, Moulding technics, Core making practicess, The structrual control applications, Sand casting technology, Permenant mould casting technologies, Centifugal casting technology, Investment casting technology, The rest of the casting technogies, Al alloys casting applications, Gray ıron casting applications, Steel casting applications, The presantations of team works.
Course Objectives	To teach technical applications of casting industry. To teach which methods of casting applicable to certain production processes in detail. To know the present Turkish and world casting industry, What is the new development in casting technology, Whow to solve the practical problems faced in casting technology.
Course Learning Outcomes	1- In order to give detailed knowledge to future metallurgical engineers in the field of casting technology. 2- To learn melting and moulding technics and core making process. 3- To instruct the structural control applications and sand mould casting technology 4- To earn detailed knowledge for permanent, centrifugal and investment casting methods. 5- To learn the Al alloys and Gray iron casting applications. 6- To learn iron and steel casting applications.
Textbook	1. Materials processing at casting / Hasse Fredriksson, Ulla Akerlind, Hoboken, NJ : Wiley, c2006. 2. Castings practice: the 10 rules of castings, John Campbell, Amsterdam ; Boston : Elsevier/Butterworth-Heinemann, 2004. 3. Casting Design and Performance, ASM; Publication Date: 2009 4. ASM Handbook Volume 15: Casting, Publisher: ASM; Publication Date: 1988. 5. Döküm teknolojisi / Ergin N. Çavuşoğlu, İstanbul : İTÜ, 1992. **6.** - Casting Design Handbook, American Society For Metals, Metals Park : Reinhold Pub. Corp., 1962.
Other References)	- P.D. Webster, Fundamentals of Foundry Technology Portcullis Press Ltd.,1980 - P.R. Beeley, Foundry Technology Butterworth.1978 - John Campbell Castings Butterworth-Heinemann 1991 - Aluminium Casting Technology (AFS) 1993.
Homework & Projects	This is an optional project releated with the principles of the metal casting topics.
Laboratory Work	
Computer Use	
Other Activities	

Assessment Criteria	**Activities**	**Quantity**	**Effects on Grading, %**
	Midterm Exams	**MIN 1**	**50**
	Quizzes		
	Homework		
	Projects		
	Term Paper/Project	**MAX 1**	**-**
	Laboratory Work		
	Other Activities		
	Final Exam	**1**	**50**

COURSE PLAN

Weeks	Topics	Course Outcomes
1	The general view of Turkish and world casting industry	I
2	Melting technics	I
3	Moulding technics	I
4	Core making practicess	II
5	The structrual control applications.	II
6	Sand casting technology	II
7	Permenant mould casting technologies.	III
8	Centrifugal casting technology	III
9	Investment casting technology	IV
10	The rest of the casting technogies	IV
11	Al alloys casting applications	V
12	Gray iron casting applications	V
13	Steel casting applications	VI
14	The presantations of team works.	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)			
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 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**
Prof. Dr. M. Niyazi ERUSLU	March, 2013	