

Course Name						
CASTING PROCESS						
Code	Semester	Local Credits	ECTS Credits	Course Implementation, Hours/Week		
				Theoretical	Tutorial	Laboratory
MET 472E	8	2	3	2	-	-
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 practices, The structural control applications, Sand casting technology, Permanent mould casting technologies, Centrifugal casting technology, Investment casting technology, The rest of the casting technologies, Al alloys casting applications, Gray iron casting applications, Steel casting applications, The presentations of team works.					
Course Objectives	<ol style="list-style-type: none"> 1.To teach technical applications of casting industry. 2.To teach which methods of casting applicable to certain production processes in detail. 3.To know the present Turkish and world casting industry, What is the new development in casting technology, Who to solve the practical problems faced in casting technology. 					
Course Learning Outcomes	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1.Materials processing at casting / Hasse Fredriksson, Ulla Akerlind, Hoboken, NJ : Wiley, 2006. 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	<ol style="list-style-type: none"> 1.P.D. Webster, Fundamentals of Foundry Technology Portcullis Press Ltd.,1980 2.P.R. Beeley, Foundry Technology Butterworth.1978 3.John Campbell Castings Butterworth-Heinemann 1991 4.Aluminium Casting Technology (AFS) 1993. 					
Homework & Projects	This is an optional project related 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	1
2	Melting technics	1
3	Moulding technics	1
4	Core making practices	2
5	The structural control applications	2
6	Sand casting technology	2
7	Permanent mould casting technologies	3
8	Centrifugal casting technology	3
9	Investment casting technology	4
10	The rest of the casting technologies	4
11	Al alloys casting applications	5
12	Gray iron casting applications	5
13	Steel casting applications	6
14	The presentations of team works	6

Relationship between the Course and Metallurgical and Materials Engineering Curriculum

	Student Outcomes	Level of Contribution		
		1	2	3
1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering science and mathematics	X		
2	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare as well as global, cultural, social, environmental and economic factors			
3	an ability to communicate effectively with a range of audiences			X
4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts			
5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			X
6	an ability to develop and conduct appropriate experimentation, analyse and interpret data, and use engineering judgement to draw conclusions			
7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies		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 AND GLASS		X	
	POLYMER	X		
	COMPOSITES	X		
	BIOMATERIALS			

1: Little, 2: Partial, 3: Full

Prepared by Assoc. Prof. Dr. Necip ÜNLÜ	Date December 2020	Revision #	Signature
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