

No	Information of Principle of Metal Casting	
1	Unit name:	Principle of Metal Casting
2	Code:	Met- 41014
3	Classification:	Engineering subject
4	Credit value:	2.5
5	Semester/ Year Offered:	1/4
6	Pre-requisite:	Met-22013
7	Mode of delivery:	Lecture, Tutorial, Practical
8	Assessment system and breakdown of marks:	
	Assignment and practical	30%
	Mid-term/ final Examination	70%
9	Academic staff teaching unit:	
10	<p>Course outcome of unit:</p> <p>In this course, students will be able</p> <p>(a) To explain the pattern and pattern making process, molding process, types of molding sand, molding process equipment and mechanization.</p> <p>(b) To apply the testing, properties and applications of core materials and core making process.</p> <p>(c) To describe the freezing of pure metals and freezing of alloys.</p> <p>(d) To determine the pouring and feeding systems of castings.</p>	
11	<p>Synopsis of unit:</p> <p>The course is concerned with the study of the patterns and pattern making. Molding and core making. Foundry Sands. Special Casting Processes. Solidification of Metals. Gating and Riserling. Casting processes, the nature of shell moulds and cores. Mould materials and their characteristics. Testing of molding materials. Permanent mold die-casting, centrifugal casting, shell molding, investment and other special casting processes.</p>	
12	<p>Topic:</p> <p>1 Patterns</p> <p>1.1 Patterns Making</p> <p>1.2 Functions of pattern</p> <p>2 Molding Process and Materials</p>	

	<ul style="list-style-type: none"> 2.1 Sand casting 2.2 Shell molding 2.3 Investment casting 2.4 Permanent mold 2.5 Centrifugal casting 2.6 Die Casting <p>3 Molding Processes Equipment and Mechanization</p> <ul style="list-style-type: none"> 3.1 Molding machine 3.2 Molding equipment 3.3 Foundry mechanization <p>4 Molding Sands</p> <ul style="list-style-type: none"> 4.1 General properties and ingredients of molding sand 4.2 Testing of molding sand 4.3 Molding sand types <p>5 Cores</p> <ul style="list-style-type: none"> 5.1 Cores making machine 5.2 Core baking 5.3 Core setting 5.4 Core applications <p>6 Core Materials</p> <ul style="list-style-type: none"> 6.1 Core sample and testing of core sand 6.2 Core sand properties 6.3 Core and casting defects <p>7 Solidifications of Metals</p> <ul style="list-style-type: none"> 7.1 Freezing of a pure metal 7.2 Freezing of alloys <p>8 Pouring and Feeding Casting</p> <ul style="list-style-type: none"> 8.1 Gating system 8.2 Design of gating system 8.3 Risers
14	Main references: Principle of metal casting, second edition, Philip.C.Rosenthal.
15	Additional references:

No	Information on Every subject	
1	Unit name:	Foundry Technology
2	Code:	Met- 42014
3	Classification:	Engineering subject
4	Credit value:	2.5
5	Semester/ Year Offered:	2/4
6	Pre-requisite:	Met-41014
7	Mode of delivery:	Lecture, Tutorial, Practical
8	Assessment system and breakdown of marks:	
	Assignment and practical	30%
	Mid-term/ final Examination	70%
9	Academic staff teaching unit:	
10	<p>Course outcome of unit:</p> <p>In this course, students will be able</p> <ul style="list-style-type: none"> (a) To apply the casting of aluminum and magnesium, gray iron, steel casting and ductile iron foundry practices. (b) To describe the composition, microstructure and properties of cast irons. (c) To design considerations for castings. (d) To explain the quality control, pollution control and plant layout for foundries, cleaning and inspections of castings and computer aided system 	
11	<p>Synopsis of unit:</p> <p>The course is concerned with the study of Melting Furnaces. Cleaning and Inspection. Casting Defects. Melting of metal for casting, pouring and feeding. Foundry plant layout. Foundry mechanization. Casting design. Metallurgical principles controls and foundry practices of industrially important alloys. Inspection and quality control. Computer simulation of foundry technology. Maintenance and pollution control.</p>	
12	<p>Topic:</p> <p style="padding-left: 40px;">7 Aluminum and Magnesium Foundry Practice</p> <p style="padding-left: 40px;">7.1 Aluminum casting</p> <p style="padding-left: 40px;">7.2 Magnesium casting</p>	

	<p>8 Steel Casting</p> <p>8.1 Molding process and sand</p> <p>8.2 Solidification factor</p> <p>8.3 Gating</p> <p>8.4 Steel making</p> <p>9 Family of Cast iron</p> <p>9.1 Chemical composition and definition</p> <p>9.2 Microstructure</p> <p>9.3 Properties of cast iron</p> <p>10 Gray Iron Foundry Practice</p> <p>10.1 Gating and risering</p> <p>10.2 Feeding the casting</p> <p>11 Ductile Iron</p> <p>11.1 Solidification of ductile-iron</p> <p>11.2 Magnesium treatment and inoculation</p> <p>12 Clearing and Inspection</p> <p>12.1 Clearing operation and equipment</p> <p>12.2 Inspection</p> <p>13 Casting Design Considerations</p> <p>7.1 Functional design</p> <p>7.2 Metallurgical design</p> <p>8 Defects in casting and quality control</p> <p>8.1 Defects in casting</p> <p>8.2 Quality control in foundries</p> <p>9 Modernization and Mechanization of Foundries</p> <p>9.1 Pollution control in foundries</p> <p>9.2 Plant layout for foundries</p> <p>10 Computer Aided System</p> <p>10.1 Solstar system</p> <p>10.2 Solid modeling</p>
14	-Main refrance:Principle of metal casting,second edieion,Philip C Rosenthal
15	Additional references:Principle of Foundry Technology,second edection,PL Jain. Principle of Foundry Technology, second edition, P L Jain.

