

**NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

<b>COURSE OUTLINE TEMPLATE</b>			
<b>Course Title</b>	Foundry Metallurgy		
<b>Course Code</b>	MT 704	<b>No. of Credits</b>	03
<b>Department</b>	MME	<b>Faculty</b>	Dr.S.P.Kumaresh Babu
<b>Pre-requisites Course Code</b>	Foundry Technology –MT 701		
<b>Course Coordinator(s) (if, applicable)</b>	NA		
<b>Other Course Teacher(s)/Tutor(s) E-mail</b>	NA	<b>Telephone No. Email</b>	3462 babu@nitt.edu
<b>Course Type</b>	Core course		
<b>COURSE OVERVIEW</b>			
This course is primarily intended to develop and familiarise the foundry metallurgy concepts of ferrous and Nonferrous alloys as well as solidification techniques.			
<b>COURSE OBJECTIVES</b>			
To know the basic concepts of physical metallurgy involved in casting of ferrous and nonferrous alloys and solidification of metals and alloys.			
<b>COURSE OUTCOMES (CO)</b>			
<b>Course Outcomes</b>	<b>Aligned Programme Outcomes (PO)</b>		
<p>After the completion of this course, the student will be able to:</p> <p>Know the physical metallurgy involved in casting of ferrous and nonferrous alloys (1, 2, 3)</p> <p>Develops a knowledge on the effect of alloying elements on the properties of the base alloy. (1,2,4,6)</p>	<ol style="list-style-type: none"> <li>1. Industrial Metallurgy post graduates are attaining knowledge of various cast alloys in ferrous and non ferrous metals</li> <li>2. Industrial Metallurgy post graduates are able to formulate and analyze the engineering data.</li> <li>3. Industrial Metallurgy post graduates are capable of exploring the resources to collect the required data, analyse and solve critical</li> </ol>		

Able to choose the appropriate furnace and deoxidation practices for the production of alloys (1,2,3,4,6)

Able to distinguish the solidification pattern for alloys and pure metals (1,2,3,4, 6)

Develop and design gating and risering systems based on the alloys properties (4, 5,6,)

- problems.
4. Industrial Metallurgy post graduates have skills in locating and applying modern tools to resolve the complex engineering problems
  5. Industrial Metallurgy post graduates are competent to work in research, industrial sectors and with multi-faceted team
  6. Industrial Metallurgy post graduates have the capacity to design, plan and execute complex processes adhering to environmental considerations and cost effectiveness.

**COURSE TEACHING AND LEARNING ACTIVITIES**

S.No.	Week	Topic	Mode of Delivery
1.	I-IV	Introduction to metallurgy of casting, Importance of foundry metallurgy, Foundry metallurgy of ferrous and nonferrous alloys. Cast iron and its types, Furnaces used for melting ferrous and nonferrous alloys.	Classroom teaching by Chalk and Talk + PPTs and Industry + Facilities at NITT
2.	V-VIII	Specifications, Gating and Risering system design	
3.	IX-X	Foundry metallurgy of Nonferrous alloys	
4.	X-XII	Solidification of pure metals, alloys	

<b>COURSE ASSESSMENT METHODS</b>				
<b>S.No.</b>	<b>Mode of Assessment</b>	<b>Week/Date</b>	<b>Duration</b>	<b>% Weightage</b>
1	First Cycle Test	IV week	60 min	20
2	Second Cycle test	VIII week	60 min	20
3	Seminar/Quiz	XII week	-	10
4	Re-test	XIII week	60 min	20 (If any student misses 1 <sup>st</sup> cycle test for medical reasons)
5	Attendance			Minimum 50% attendance required for writing the semester examination
6	End semester exam based on classroom teaching	XV	3 h	50

**ESSENTIAL READINGS : Textbooks, Reference books**

**Text Book**

1. Heine R. W., Loper C. R., Rosenthal P. C., „ Principles of Metal Casting”, 2<sup>nd</sup> Edition, Tata McGraw Hill

Publishers, 1985

2. Flinn R.A., „ Fundemenatls of Metal casting”, 3<sup>rd</sup> Edition, Addison Wesley , 1963

**REFERENCES**

1. Murphy.A.J. "Non Ferous Foundry Metallurgy", Pergoman press, USA, 1984

**COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)**

The exit survey will be assessed based on the questionnaire prepared by the

Institute/class teacher and the expected attainment to be greater 75%.

The feedback collected from students by the Institute is to be informed to the teacher to improve the course in future semesters.

### **COURSE POLICY**

**(Including plagiarism, academic honesty, attendance, grading etc.)**

1. The students are expected to attend all the classes except for medical reasons. Minimum attendance of 50% (including the concession for on-duty and medical reasons) is required for writing the semester examination.
2. Apart from technical content and presentation, plagiarism will be checked for the assignments.
3. The relative grading policy will be followed and the passing minimum marks will be fixed based on Institute guidelines.

### **ADDITIONAL COURSE INFORMATION**

Students can contact the Course Coordinator at any time through email/phone. The Course Coordinator is available for consultation by appointment through email/phone. The Course Coordinator email id/phone number are available in this course plan.

### **FOR SENATE'S CONSIDERATION**

  
Course Faculty

(Dr.S.P.Kumaresh Babu)

  
Class Committee Chairman

  
HOD/MME