

**Department of Metallurgical and Materials Engineering**  
**NATIONAL INSTITUTE OF TECHNOLOGY**  
**TIRUCHIRAPPALLI-620015**  
**(Odd Semester for the Academic Year 2017-2018)**

<b>COURSE OUTLINE</b>			
<b>Course Title</b>	Manufacturing Processes		
<b>Programme</b>	M. Tech		
<b>Course Code</b>	MT 665	<b>No. of Credits</b>	3
<b>Department</b>	MME	<b>Faculty</b>	Prof.T. Srinivasa Rao
<b>Pre-requisites Course Code</b>	Not applicable		
<b>Course Coordinator(s) (if, applicable)</b>			
<b>Other Course Teacher(s)/Tutor(s) E-mail</b>	-	<b>Telephone No.</b>	7893150786
<b>Course Type</b>	<b>Elective course</b>		
<b>COURSE OVERVIEW</b>			
<p>Introduction to manufacturing processes – different approaches – technical and economic considerations – significance of material properties with respect to selection of manufacturing process</p> <p>Conventional casting processes – advantages and limitations – melting practices – design of castings – special casting processes</p> <p>Conventional material joining processes – concept of weldability – need for dissimilar joints - machining processes – concept of machinability – material examples – developments in machining processes</p> <p>Rolling – forging – extrusion – drawing - sheet metal forming – classification, advantages and limitations</p> <p>Introduction to powder metallurgy – recent developments esp. in forging and mechanical alloying - concept of near net shape processing - concept and applications of rapid prototyping – emerging technologies for nano – processing</p>			
<b>COURSE OBJECTIVES</b>			
<p>To know the fundamental concepts of various manufacturing processes and its applications and limitations with respect to industries.</p>			

<b>COURSE OUTCOMES (CO)</b>			
<b>Course Outcomes</b>			<b>Aligned Programme Outcomes (PO)</b>
At the end of this course, the students would be able to:			
1. Know the selection of materials for various applications.			<b>1 &amp; 3</b>
2. Know the fundamental concepts of metal casting, melting techniques and its limitations.			<b>1,2 &amp; 5</b>
3. Know the weldability concepts with respect to different materials and various welding process such as pressure and non-pressure welding.			<b>5 &amp; 6</b>
4. Know the machinability concepts and economics of Machining.			<b>5 &amp; 6</b>
5. Know the concepts of various metal forming techniques and its applications and limitations regarding the manufacture of various wrought products.			<b>5 &amp; 6</b>
6. Know the powder metallurgy concepts of powder production, sintering and nanomaterials processing techniques.			<b>5 &amp; 6</b>
7. Develop an overall knowledge of the selection of suitable manufacturing technique to produce a product.			<b>3 &amp; 6</b>
8. Know the basic concepts of rapid prototyping and near-net-shape processing.			<b>1</b>
<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>			
<b>S.No.</b>	<b>Week</b>	<b>Topic</b>	<b>Mode of Delivery</b>
1	Aug. 1 & 2	Introduction, different approaches – technical and economic considerations	Chalk and Board, PPT
2	3 & 4	Significance of material properties with respect to selection of manufacturing process	Chalk and Board, PPT Chalk and Board, PPT
3	Sept. 1 & 2	Conventional casting processes – advantages and limitations	Chalk and Board, PPT
4	3 & 4	Melting practices – design of castings – special casting processes	Chalk and Board, PPT
5	Oct. 1 & 2	Conventional material joining processes – concept of weldability – need for dissimilar joints –	Chalk and Board, PPT Chalk and Board, PPT

6	3 & 4	machining processes – concept of machinability – material examples – developments in machining processes	Chalk and Board, PPT
7	Nov. 1 & 2	Rolling – forging – extrusion – drawing - sheet metal forming – classification, advantages and limitations	Chalk and Board, PPT
8	3 & 4	Introduction to powder metallurgy – recent developments esp. in forging and mechanical alloying - concept of near net shape processing - concept and applications of rapid prototyping – emerging technologies for nano – processing	Chalk and Board, PPT

### COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Assignments (2)	August/Oct.		10
2	Mid-term test	October	1hr	30
3	Seminar	November	15min/student	10
4	End Semester	November	3hrs	50

### ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

1. Rao, P.N, 'Manufacturing Technology', Tata McGraw Hill, 1996.
2. Kalpakjian, S, 'Manufacturing Engineering and Technology', 3rd Edition, Addison-Wesley, 1995.

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

Student's feedback

**COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)**

Attendance should be more than 75%, should have moral ethics while preparing the assignments and writing the examinations.

**ADDITIONAL COURSE INFORMATION**

**FOR SENATE'S CONSIDERATION**



Course Faculty \_\_\_\_\_

CC-Chairperson \_\_\_\_\_



HOD \_\_\_\_\_



23/08/2017

**Dr. T. SRINIVASA RAO**

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