

MANUFACTURING PROCESS LABORATORY

III Semester: ME								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AMEB06	Core	L	T	P	C	CIA	SEE	Total
		-	-	2	1	30	70	100
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 24			Total Classes: 24	
I. COURSE OVERVIEW:								
<p>Manufacturing is the process of turning of raw materials or parts into finished goods through the use of conventional tools, human labor and machinery processing. In this Laboratory course introduce four basic production processes for producing desired shape of a product. These are casting, machining, welding and deformation processes. It inculcates knowledge and skill to the preparing a wooden pattern to completion of a casting. Also, understand the welding and press working processes. Manufacturing processes has been an integral part of society for centuries and this looks to continue for as long as humans need products ranging from food and clothes to vehicles and pharmaceuticals.</p>								
II. OBJECTIVES:								
The courses should enable the students to:								
<ul style="list-style-type: none"> I The need of manufacturing processes in the day-to-day life, and the study of basic manufacturing techniques and tools used for production. II The information related to thermal, metallurgical aspects during casting and welding for defect free manufacturing components. III Enhance the developmental use of traditional manufacturing processes to application of real time products with economical production. 								
III. COURSE OUTCOMES:								
After successful completion of the course, students should be able to:								
CO 1	Identify the steps involved in making a casting of desired pattern for automotive industry components like cylinder heads, engine blocks. .	Apply						
CO 2	Evaluate various defects and shortcomings during welding operation various defects and shortcomings during welding operation such as TIG, MIG and Spot welding for real time applications.	Analyze						
CO 3	Select the appropriate metal forming techniques for producing components like hexagonal bolt, nut.	Apply						
CO 4	Build out the molding processes uses plastic as raw material and their application in industries for making of bottles and stamps.	Evaluate						
CO 5	Select the gating and riser system needed for casting requirements to achieve defect/error free components.	Evaluate						
CO 6	Identify the appropriate manufacturing process parameters for effective development of optimized prototype / products.	Apply						
IV. SYLLABUS:								
LIST OF EXPERIMENTS								
Week-1	PATTERN MAKING							
Pattern design and making, casting drawing.								
Week-2	SAND PROPERTIES TESTING							
Sand properties testing for strengths and permeability.								
Week-3	METAL CASTING							
Moulding, melting and casting.								

Week-4	ARC WELDING
ARC welding lap and butt joint.	
Week-5	SPOT WELDING
Spot welding, TIG welding.	
Week-6	PLASMA WELDING AND BRAZING
Plasma welding and brazing (water plasma device).	
Week-7	APPLICATION OF SIMPLE AND COMPOUND DIE
Blanking and piercing,	
Week-8	APPLICATION OF PROGRESSIVE DIE
Hydraulic press: Operation and study of simple, compound and progressive press tool.	
Week-9	MECHANICAL PRESS WORKING
Bending and other operation.	
Week-10	PROCESSING OF PLASTICS
Injection moulding.	
Week-11	PROCESSING OF PLASTICS
Blow moulding.	
Week-12	BEYOND SYLLABUS
Riveting of a plates.	
Week-13	EXAMINATIONS
Reference Books:	
<ol style="list-style-type: none"> 1. R. K. Jain, "Production Technology", Khanna Publishers, 18th Edition, 2013. 2. T. V. Ramana Rao, "Metal Casting", New Age, 1st Edition, 2010. 3. Philips Rosenthal, "Principles of Metal Castings", TMH, 2nd Edition, 2001. 4. B. S. Raghuvamshi, "A Course in Workshop Technology", Dhanpat Rai & Sons, 2014. 5. Kalpakjin S, "Manufacturing Engineering and Technology", Pearson Education, 7th Edition, 2014. 7. HMT, "Production Technology", McGraw-Hill Education, 1st Edition, 2013. 	
Web References:	
1. http://www.iare.ac.in	