

Subject Code: 01ME0402
Subject Name: Manufacturing Processes-II
B.Tech. (II Year) Sem-IV Mechanical & Automobile Engineering
Type of course: Engineering Science

Prerequisite: Knowledge of Manufacturing process-I

Rationale: Understanding of basic principles of manufacturing techniques and proper selection of manufacturing processes is required in various field of engineering.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks		Total Marks
L	T	P		Continuous Evaluation	Final Exam	
4	---	2	5	100	50	150

Content:

Sr. No	Module	Topic	Detail	Marks	Hours
1	Metal Casting	PATTERN MAKING	Identification	1	8
			Design with allowances	3	
			Making a wooden pattern	3	
		MOULD MAKING	Composition, methodology	1	6
			No-back mould making	3	
			Sodium silicate mould making	3	
		SAND TESTING	Specimen preparation	1	4
			Permeability testing	3	
			Clay Content testing	3	
			Sieve analysis	3	
		METAL PORING	Melting metal for ready to pour	1	4
			Gating system design & preparation	2	
			sand mould casting	2	
		INVESTMENT CASTING	Industry visit and summery report	8	6

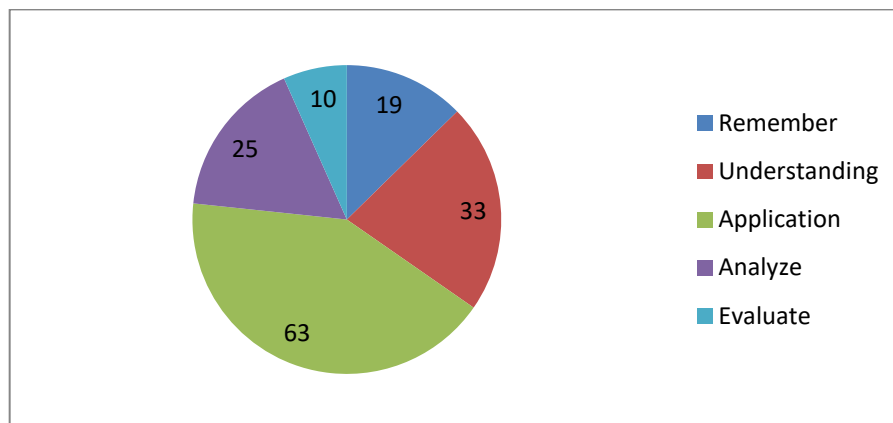
		Study of other/remaining casting techniques	Working principle and methodology	8	4
		Metal casting defects	List of defects with causes and remedies	5	4
			TOTAL (a)	50	36
2	Metal Joining	Introduction	Types of joint and edge preparation	3	4
		SMAW (SHIELDED METAL ARC WELDING)	Working Principle and set-up	1	4
			Parameters	1	
			Performance	2	
		MIG (METAL INERT GAS WELDING)	Working Principle and set-up	1	4
			Parameters	1	
			Performance	2	
		TIG (TUNGSTEN INERT GAS WELDING)	Working Principle and set-up	1	4
			Parameters	1	
			Performance	2	
		SPOT WELDING	Working Principle and set-up	1	4
			Parameters	1	
			Performance	2	
		OXY-ACEYTYLENE GAS WELDING/CUTTING	Working Principle and set-up	1	4
			Parameters	1	
Performance	2				
FRICTION STIR WELDING	Working Principle and set-up	1	4		
	Parameters	1			
	Performance	2			
		Study of other/ remaining metal joining processes	Working principle and methodology	4	4
		Metal joining defects	List of defects with causes and remedies	4	3
			TOTAL (b)	35	35
3	Metal Forming (from Virtual lab)	Rolling	Working Principle and set-up	2	3
			Parameters	1	
		Forging	Working Principle and set-up	2	3
			Parameters	1	

Extrusion	Working Principle and set-up	1	3
	Parameters	2	
Drawing & Deep drawing	Working Principle and set-up	2	3
	Parameters	1	
Metal forming defects	List of defects with causes and remedies	3	2
TOTAL (c)		15	14
TOTAL [(a) + (b) + (c)]		100	85

Final Exam of MP-II

Making a componet which require minimum two machine

Detail	Marks	Hours
Pattern making for the given drawing	15	6
Sand casting for the given component	15	
To prepare a weld joint by arc welding	10	
To Prepare a joint by spot welding	10	
Total	50	6



Reference Books:

1. Manufacturing Engineering and Technology By S. Kalpakjian, Pearson.
2. Manufacturing Processes Vol-I, By P.N.Rao, Mac-grawhill publication.
3. Manufacturing technology –I, by P.C.Sharma, S.Chand Publication.
4. Manufacturing Processes and Systems, 9th Ed. Phillip F., Ostwald, Jairo Munoz, Wiley India
5. Casting Practice by John Campbell, Elsevier/Butterworth-Heinemann publication.
6. Welding Engineering and Technology, by R.S.Parmar, 2nd edition, khanna publication.

8. Welding Technology, by O. P. Khanna, Dhanpat Rai publishers.
9. Welding process technology by Houldcroft P.T., Cambridge University Press, 1977.

Course Outcome:

After learning the course the students should be able to:

- | | |
|------------|---|
| CO1 | Understand the basic concept of different manufacturing processes and their parameters. |
| CO2 | Compare the different manufacturing processes and parameters. |
| CO3 | Choose the right manufacturing process according to requirements. |
| CO4 | Analyze any conventional processes and parameters. |
| CO5 | Develop the sequence of operations to produce the end product. |
| CO6 | Judge the limitations and scope of process to perform variety of functions. |

Major Equipment:

1. Different patterns for Demonstration
2. Small Foundry
3. Arc welding Machine (SMAW, TIG, MIG etc.)
4. Resistant Spot welding m/c.
5. Oxy- Acetylene welding machine.

List of Open Source Software/learning website:

1. <http://nptel.iitm.ac.in>,
2. <http://vlab.co.in>
3. <http://www.sme.org/fmp/>
4. <http://efoundry.iitb.ac.in/Academy/index.jsp>

Syllabus for Bachelor of Technology

Mechanical Engineering