

**GOPAL KRISHNA COLLEGE OF
ENGINEERING AND TECHNOLOGY
GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005**

LESSON PLAN

Name of the Subject: BASIC MANUFACTURING PROCESSES(BMP)

Name of the Faculty: Er. BARSHA BARNALI

Subject Code:MEPC2006

Course Structure:3-0-0

Semester: 4th Semester

Branch:Mechanical

Semester From: JANUARY to APRIL

No. of Weeks: 16

Week	Day	Theory / Practical Topics	Classes
1		Unit 1 – Metal Casting and Foundry Processes	15
	1	Introduction to manufacturing: primary and secondary processes	1
	2	Principle of metal casting and terminology	1
	3	Types of patterns, pattern materials, and allowances	1
2	4	Moulding materials and sand casting process	1
	5	Composition of moulding sand: binders and additives	1
	6	Properties of moulding sand and sand testing	1
3	7	Casting processes: continuous and centrifugal casting	1
	8	Die casting and investment casting	1
	9	Shell moulding process	1
4	10	Casting defects and remedies	1

Week	Day	Theory / Practical Topics	Classes
	11	Melting furnaces: cupola and resistance furnace	1
	12	Induction and arc furnaces	1
5	13	Solidification of castings	1
	14	Gating system design: sprue, runner, riser	1
	15	Numerical/problem-solving session (Module-I)	1
		Unit 2 – Welding Processes	9
6	16	Weldability and classification of welding processes	1
	17	Gas welding and oxy-acetylene welding	1
	18	Flame cutting	1
7	19	Arc welding processes (SMAW, GTAW, GMAW)	1
	20	Advanced arc welding (FCAW, PAW, SAW)	1
	21	Brazing and soldering	1
8	22	Resistance welding	1
	23	Friction welding and solid-state welding	1
	24	Weld inspection and testing	1
		Unit 3 – Metal Forming Processes	15
9	25	Formability of metals	1
	26	Cold and hot working	1

Week	Day	Theory / Practical Topics	Classes
	27	Rolling: types of rolling mills	1
10	28	Rolling defects	1
	29	Forging: smith forging	1
	30	Drop forging and press forging	1
11	31	Machine forging and forging defects	1
	32	Extrusion: direct and indirect	1
	33	Impact and hydrostatic extrusion	1
12	34	Applications of extrusion	1
	35	Tutorial/problem-solving (Module-III)	1
	36	Revision session	1
		Unit 4 – Sheet Metal and Advanced Manufacturing Processes	12
13	37	Sheet metal working: bending and forming	1
	38	Deep drawing and wire drawing	1
	39	Shearing and stretch forming	1
14	40	Metal spinning, embossing and coining	1
	41	Explosive forming (introduction)	1
	42	Coating and deposition methods	1

Week	Day	Theory / Practical Topics	Classes
15	43	Industrial applications of advanced processes	1
	44	Case studies in manufacturing	1
	45	Revision of Module-IV	1
16	46	Comprehensive revision of all modules	1
	47	Problem-solving session	1
	48	Doubt clearing and exam preparation	1

Books Recommended

1. *Manufacturing Technology* by P.N. Rao
2. *Production Technology* by P.C. Sharma
3. *Manufacturing Engineering and Technology* by Kalpakjian and Schmid
4. *Workshop Technology* by Hazra Choudhury

NPTEL Lectures

1. <https://nptel.ac.in/courses/112107145>
2. <https://nptel.ac.in/courses/112104225/>