

Manufacturing Process

S.No.	Topic (from syllabus)	Lecture No.	Lecture Plan Date	Sub-Topics (Reference from Text-books)	Assignment / Quiz	Exam	Target Outcome
1	Introduction	1		Introduction of Manufacturing processes and their classification/ T1-P1-4	Assignment 1 / Quiz 1	First Term Exams	CO-ETME105.1
		2		Basic Metals & Alloys: Properties and Applications. Properties of Materials: Strength, elasticity, stiffness, malleability, ductility, brittleness, toughness and hardness/ T1-P100-03			
		3		Ferrous Materials: Carbon steels, its classification, its properties, Applications/ T1-P148-49 Wrought Iron, Cast Iron/ T1- P140-43			
		4		Alloy steels: stainless steel, tool steel/ T1- P158,162,164 Non-Ferrous metals & alloys: Properties and uses of various non-ferrous metals & alloys and its composition such as Cu-alloys: Brass, Bronze, Al alloys such as Duralumin/ T1-P173-74,178-81			
2	Heat Treatment Processes	5		Introduction to Heat treatment of carbon steels: Annealing, Normalizing/ T1-P198,198-202	Assignment 2/ Quiz 2	First Term Exams	CO-ETME105.2
		6		Quenching & Tempering and Case- Hardening/ T1-P203-04,208-14			
3	Casting Processes	7		Principle of Metal Casting Process, Moulds/ T1-P297-99, 388-91	Assignment 3/ Quiz 3	Second Term Exams	CO-ETME105.3
		8		Pattern Materials, chaplets, chills/ T1-P329-30 Types Of Patterns/ T1-P335-40 Pattern Allowances/ T1-P332-34			
		9		Composition and Properties of Moulding Sand/ T1-P362-65, 367 Foundry Tools/ T1-P347-52			
		10		Concept of Cores and Core Print/ T1-P415-17			
		11		Elements of Gating System/ T1-P409-07			
		12		Description and Operation of Cupola/ T1-P429-37			
		13		Permanent Mould Casting or Gravity Die Casting/ T1-P455-58 Pressure Die Casting (a) Hot Chamber Die Casting (b) Cold Chamber Die Casting/ T1-P459-63			
		14		Advantages and limitations of Die Casting/ T1-P469			
		15		Centrifugal Casting (a) True Centrifugal Casting/ T1-P470-71 (b) Semi-Centrifugal Casting (c) Centrifuging, Advantages & Disadvantages/ T1-P472-74			
		16		Investment casting, its Advantages and Limitations/ T1-P475-79			
		17		Casting Defects and its Remedies/ T1-P484-95			
4	Smithy and Forging	18		Hot and Cold working process/ T1-P528	Assignment 4 / Quiz 4	Second Term Exams	CO-ETME105.4
		19		Different tools and equipments used for Blacksmith Forging/ T1-P532-41			
		20		Different operations performed in Blacksmith Forging/ T1-P545-51			
		21		Forging types: Smith forging, Drop forging/ T1-P557 Press forging, Machine forging, Comparison of drop & press forging/ T1-P55859			
5	Benchwork and Fitting	22		Forging defects; Extrusion, wire drawing, swaging/ T1-P564	Assignment 5 / Quiz 5	Second Term Exams	CO-ETME105.5
		23		Tools used in Fitting shop/ T1-P605-27			
		24		Fitting operations; sawing; chipping, filing, scraping drilling/ T1-P642-46			
		25		Thread cutting (with taps and dies), Marking and marking tools/ T1-P647,642			
6	Metal Joining	26		Introduction to Metal Joining Processes, Welding Principle/ T1-P654-55	Assignment 5 / Quiz 5	Second Term Exams	CO-ETME105.5
		27		Classification of welding techniques, Types of joints and edge preparation/ T1-P656,677-81 Oxyacetylene gas welding, equipment operation and fields of application/ T1-P669-76			
		28		Manual Arc Welding, Electrodes, Carbon Arc Welding/ T1-P686-93			
		29		Submerged Arc Welding and Atomic Hydrogen Welding/ T1-P701-02, 705-06			
		30		TIG and MIG welding/ T1-P696-99			
		31		Electric Resistance Welding, Underlying Principle, Spot welding/ T1-P657-61			
		32		Seam, Flash, Butt and Percussion Welding/ T1-P662-68			
		33		Flux: composition, properties and function, Braze/ T1-P675			
		34		Brazing and soldering, process and application/ T1-P713-715			
		35		Welding defects/ T1-P718-23			
7	Sheet Metal Work	36		Tools and equipments used in sheet metal work, metals used for sheets/ T1-P770-76	Assignment 5 / Quiz 5	Second Term Exams	CO-ETME105.5
		37		Standard specification for sheets, Types of sheets Sheet metal operations: shearing, drawing, bending/ T1-P776-80			
		38		and other operation like spinning, stretch forming, embossing, coining/ T1-P523-24, 526-27			
8	Powder Metallurgy	39		Introduction of powder metallurgy process/ T1-P570	Assignment 5 / Quiz 5	Second Term Exams	CO-ETME105.5
		40		Production of metal powder its preparation and process/ T1-P571-74			
		40		Blending, compaction/ T1-P576 Pressurizing, sintering, advantages, limitation and application/ T1-P577-78, 584			

Text Books:

[T1] B.S.Raghuwandi, "Workshop Technology Vol 1 - Manufacturing Process", Dhanpat Rai & Co.

[T2] P.N.Rao, "Manufacturing Technology", TMH publication

Reference Books:

[R1] R.B.Gupta., "Production Technology Vol 1 - Production Process.", Satya Prakashan

[R2] Hazar: Chowdhary, "Workshop Technology", Media Promoters and Publishers Pvt. Ltd.