Lecture Plan

Course Code	Name of the course	L	T	P	CREDIT
	Manufacturing Process	**2**	**0**	**3**	**09**
Course objectives cum learning outcomes	In this course, the students will be exposed to the common manufacturing processes such as casting, metal forming, metal cutting and welding. Further, the practical assignments of this course consist of hands on experience and demonstration of these processes which will make the students confident to handle projects in future.				

Module	Course Content	Lecture hours
Module 1 (Metrology)	Introduction and general safety rules for workshop. Dimensions and tolerances. Measuring instruments and gauges: precision gauge blocks, linear dimensions, comparative instruments, fixed gauges and angular measurements, surfaces and their measurements.	03
Module 2 (Foundry Shop)	Principle and classification of casting process, Patterns and allowances, Sand mould Casting, expandable and nonexpendable casting Processes, Cast materials and casting defects, special types of casting process: investment casting process, shell moulding and centrifugal casting.	05
Module 3 (Metal forming Shop)	Principle of metal forming, bulk deformation and sheet deformation processes, hot working and cold working processes. Tube manufacturing process. Sheet metal working: principle and applications.	05
Module 4 (Machine Shop)	Principle and classification of metal removal operation, Machine tools - lathe, shaping, milling, drilling, boring, and grinding machine, cutting tools, selection of cutting speed, feed and depth of cut for different operations. Machine drives and Work holding devices.	07
Module 5 (Metal cutting and Welding shop)	Working principle of sheet metal /plate cutting through gas, plasma, lasers. Principle of gas and arc welding, brazing and soldering, type of weld joints, welding defects. Solid state welding.	03
Module 6 (Advanced Manufacturing process)	Principle of ECM, EDM, WAJM, laser machining, CNC machine: introduction and application, 3D printing.	03

Text book:
Manufacturing Science, Ghosh and Mallick, East-West publisher
Principles of Modern manufacturing, M.P Groover, Willy India, 2015
Books:
1. Workshop Technology Part I, II, III by W A J Chapman, Viva Books Pvt Ltd.
2.Manufacturing Engineering and Technology by S Kalpakjian and Schmid, Pearson Publisher
3. Elements of Workshop Technology (I & II) by Hazra & Chaudhary , Asia Publishing House

Mark distribution theory and practical:

		Marks	Evaluation steps
Workshop Practices (Practical)		30	Job preparation, Attendance, test
Theory	Mid sem	28	Conducted approximately mid of semester
	End sem	42	Conducted at the end of semester