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. Principle of metrology and introduction to commonly used mechanical devices: gauges/indicator and levels, CMM, surface roughness meter and other shop floor devices. Production drawings, design concepts, material selection.				04 SNC
Module 2 (Foundry Shop)	Patterns and allowances, Sand mould Casting, expandable and nonexpendable casting Processes, casting defects and remedies, special types of casting process. Cast materials and defects.				04 AKD
Module 3 (Smithy 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.				03 SNC
Module 4 (Machine Shop)	Principle 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 VB
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 AKD
Module 6 (Advanced Manufacturing process)	Principle of ECM, EDM, WAJM, laser machining, Powder Metallurgy, CNC machine operation, 3D printing and scanning, application of robots in manufacturing process.				05 VB

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	52	Conducted at the end of semester

	Module	
SC	1+3	07
AKD	2+5	07
VB	4+6	12