

**Course Number: ME308**

**Course Name: Manufacturing Engineering**

**Credits: 3-0-0-3**

**Prerequisites: IC141 Product Realization Technology**

**Intended for: B-Tech, Mechanical**

**Distribution: Core**

**Semester: Odd/even**

**Preamble:** The basic objective of this course is to introduce different manufacturing processes used in an industry.

**Course contents:**

**Sheet Metal Working:** Types of presses, Operations (shearing, bending, spinning, embossing, blanking, coining, punching and deep drawing), Design of structures using sheet metal working. **(7 L)**

**Introduction to Jigs and Fixture Design:** Principles of location and clamping. **(3 L)**

**Non-conventional Machining Processes:** Electric discharge machining (EDM), Electrochemical machining, LASER and Abrasive flow machining. **(8 L)**

**Introduction to CIM:** Trends in Modern Manufacturing, Techniques to enhance flexibility, productivity, product quality and interoperability, Product life cycle, Concepts of product development, Building blocks of CIM. **(8 L)**

**Rapid prototyping:** Need for Rapid Prototyping, Basic Principles and advantages of RP, Classifications of different RP techniques with examples, Introduction to three representative RP techniques: Fused deposition modeling, Laminated object manufacturing and Stereo-lithography **(8 L)**

**Micro-manufacturing:** An overview of micro mechanical systems and their applications, MEMS Microfabrication methods, Silicon Micromachining methods, Laser Micromachining methods, Mechanical Micromachining techniques, CAD/CAM Tools for Micro-manufacturing processes. **(8 L)**

**Text Books:**

1. Serope Kalpakjian, and Steve R. Schmid., Manufacturing Engineering and Technology, 4<sup>th</sup> Ed., Perason Publishers, 2016.