

Course Type	Course Code	Name of Course	L	T	P	Credit
DP	MEC 304	Production Technology Lab	0	0	2	2

Course Objective
<ul style="list-style-type: none"> To provide in-hand exposure on the technologies involved in manufacturing processes like metal casting, forming, welding and machining. To provide knowledge about the principle, operation and applications of different machines tools and fixtures
Learning Outcomes
<p>Upon successful completion of this course, students will:</p> <ul style="list-style-type: none"> have a complete idea about the different manufacturing processes, the requirement of specific equipment and tools, and safety measures for making a component. be able to manufacture components as per production drawing using suitable machine tools and their process parameters.

Unit no	Topics to be covered	Laboratory	Learning Outcome
1	Metal cutting tool grinding operation on tool and cutter grinder.	1	Tool designation and conversation of angles for sharpening the tool
2	Measurement and analysis of cutting forces and temperature in turning operation.	1	Mechanics of chip formation and measurement methods of cutting forces involved.
3	Gear manufacturing (with measurement) on milling/gear hobbing/gear shaping machine tool.	1	Understanding of milling operations and indexing. A practical hand on experience of gear cutting on gear shaping and gear hobbing machine.
4	Sand preparation and testing: specimen preparation for testing permeability, clay content, grain fineness number, moisture content, green compression strength, green shear strength, splitting strength, hardness, etc.	1	Understanding on the moulding sand's properties and their testing methods
5	Casting of metals after preparation of mould and demonstration on gravity die casting process.	1	Primary understanding on design of gating system. Understanding of the different casting processes and its defects.
6	Experiments on welding process: MIG, TIG and demonstration of other advanced welding and brazing processes.	1	A practical hand on experience of MIG & TIG Welding Processes. Understand the edge and sample preparation technique.
7	Inspection and analysis of welded joints: HAZ, grain structure	1	An understanding of the microstructure of the welded joint and defects induced during welding
8	Formability tests of sheet metals and product preparation.	1	Understating on the properties of materials for deformation and the testing methods
9	Mini project work on manufacturing	4	Able the make a component as per production drawing

Text books / References:

1. Manufacturing Engineering and Technology, Kalpakjian and Schmid, Pearson Publishers, 7th Edition, 2014