MANUFACTURING PRACTICE

II Semester: AE / ME / CE

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
AMEC02	Foundation	0	0	2	1	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36				Total Classes: 36		

Prerequisite: There are no prerequisites to take this course.

I. COURSE OVERVIEW:

Manufacturing Practice is intended to enhance the learning experience of the student about Engineer-ing tools for cutting and measuring used in a workshop. Students are expected to gain experience in hands on training as well as knowledge to carry out a particular process for making a product using the basic manufacturing devices used in Workshop.

II. COURSE OBJECTIVES:

The students will try to learn:

I. The application of jigs and fixtures, measuring, marking and cutting tools in various types of manufacturing processes.
II. The preparation of different joints in carpentry and fitting and also familiarizes wood working machinery.
III. The concepts of forming processes by forging, black-smithy and tin-smithy with an application extracts of Engineering Drawing.
IV. The standard electrical wiring practices for domestic and industrial appliances.
V. The current advancements in developing the prototype models through digital manufacturing facilities.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	**Identify** the conventional representation of materials and machine elements of various machining processes such as moulding and machineshop.	Apply
CO 2	**Determine** the ability to Produce Fitting and welding jobs as per specified dimensions in addition to demonstrating proficiency with handtools common to fitting.	Evaluate
CO 3	**Create** works of metal art using fire and furnace to convert given shape into useable elements using basic blacksmith techniques.	Create
CO 4	**Organize** the moulding techniques for producing casting of different and complex shapes using various patterns.	Apply
CO 5	**Develop** various engineering and household articles such as tin boxes,cans, funnels, ducts etc., from a flat sheet of metal.	Apply
CO 6	**Compare** various wiring diagrams using conduit system of wiring and Prepare different types of wiring joints on the given circuit boards using appropriate electrical tools.	Analyze

IV. SYLLABUS:

Week-1: CARPENTRY-I

Batch I: Preparation of lap joint as per given dimensions.
Batch II: Preparation of dove tail joint as per given taperangle.

Week-2: CARPENTRY-II

Batch I: Preparation of dove tail joint as per given taper angle.
Batch II: Preparation of lap joint as per given dimensions.

Week-3: FITTING

Batch I & II: Make a straight fit and straight fit for given dimensions.
Make a square fit for straight fit for given sizes.

Week-4: ELECTRICAL AND ELECTRONICS

Batch I & II: Make an electrical connection to demonstrate domestic voltage and current sharing.
Make an electrical connection to control one bulb with two switches-stair case connection.

Week-5: BLACKSMITHY- I, TINSMITHY- I
Batch I: Prepare S-bend & J-bend for given MS rod using open hearth furnace.
Batch II: Prepare the development of a surface and make a rectangular tray and a round tin.

Week-6: TINSMITHY- I, BLACKSMITHY- I
Batch I: Prepare the development of a surface and make a rectangular tray and a round tin.
Batch II: Prepare S-bend & J-bend of given MS rod using open hearth furnace.

Week-7: MOULD PREPARATION
Batch I: Prepare a wheel flange mould using a given wooden pattern.
Batch II: Prepare a bearing housing using an aluminum pattern.

Week-8: **MOULD PREPARATION**
Batch I: Prepare a bearing housing using an aluminum pattern.
Batch II: Prepare a wheel flange mould using a given wooden pattern.
Week-09: WELDING
Batch I: Arc welding & Gas Welding.
Batch II: Gas welding & Arc Welding.

Week-10: INJECTION MOULDING
Batch I & II: Injection moulding.

Week-11: BLOW MOULDING
Batch I & II: Blow moulding.

Week-12: MACHINE SHOP-Turning and Milling
Batch I & II: Working on central lathe and shaping machine.
Working on milling machine.

Week-13: **ADVANCED MACHINE SHOP-I**
Batch I & II: Working on CNC Turning machines.
Working on CNC Vertical Drill Tap Center.

Week-14: **ADVANCED MACHINE SHOP-II**
Batch I & II: Working on CNC Laser Engraving Machine.
Working on 5 Axis CNC Routing Machine.

V. REFERENCE BOOKS:

1. Hajra Choudhury S.K., Hajra Choudhury A.K. and NirjharRoy S.K., "Elements of Workshop Technology", Media promoters and publishers private limited, Mumbai, Vol. I 2008 and Vol. II 2010.
2. Kalpakjian S, Steven S. Schmid, "Manufacturing Engineering and Technology", Pearson Education India Edition, 4th Edition, 2002.
3. Gowri P. Hariharan, A. Suresh Babu," Manufacturing Technology – I", Pearson Education, 2008.
4. Roy A. Lindberg, "Processes and Materials of Manufacture", Prentice Hall India, 4th Edition, 1998.
5. Rao P.N., "Manufacturing Technology", Vol. I and Vol. II, Tata McGraw-Hill House, 2017.

VI. WEB REFERENCES:

http://www.iare.ac.in