

ENGINEERING WORKSHOP PRACTICE

I Semester: CSE / CSE (AI&ML) / CSE (DS) / CSE (CS) / CSIT / IT								
II Semester: ECE / EEE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AMEC04	Foundation	L	T	P	C	CIA	SEE	Total
		-	-	2	1	30	70	100
Contact Classes: Nil		Tutorial Classes: Nil		Practical Classes: 28		Total Classes: 28		
Prerequisite: There are no prerequisites to take this course.								
I. COURSE OVERVIEW:								
<p>The course is intended to provide the basic concepts about Engineering tools for cutting and measuring used in a workshop. The students will be benefited from hands on training process as well as knowledge to carry out a particular process for making a product. This course provides wider perspective of manufacturing, processes to learn and introduces major trades as well as digital manufacturing facilities.</p>								
II. COURSE OBJECTIVES:								
The students will try to learn:								
<p>I. The application of jigs and fixtures, measuring, marking and cutting tools in various types of manufacturing processes.</p> <p>II. The preparation of different joints in carpentry and fitting and also familiarizes wood working machinery.</p> <p>III. The concepts of forming processes by forging, black-smithy and tin-smithy with an application extracts of Engineering Drawing.</p> <p>IV. The standard electrical wiring practices for domestic and industrial appliances.</p> <p>V. The current advancements in developing the prototype models through digital manufacturing facilities.</p>								
III. COURSE 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: 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-3: 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-4: 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-5: 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-6: 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-7: WELDING								
Batch I: Arc welding & Gas Welding.								
Batch II: Gas welding & Arc Welding.								
Week-8: INJECTION MOULDING								
Batch I& II: Injection moulding.								
Week-9: BLOW MOULDING								
Batch I& II: Blow moulding.								

Week-10: MACHINE SHOP MILLING

Batch I & II: Working on milling machine.

Week-11: MACHINE SHOP TUNING

Batch I & II: Working on central lathe and shaping machine

Week-12: ADVANCED MACHINE SHOP-I

Batch I & II: Working on CNC Turning machines.

Working on CNC Vertical Drill Tap Center.

Week-13: ADVANCED MACHINE SHOP-II

Batch I & II: Working on CNC Laser Engraving Machine.

Week-14: ADVANCED MACHINE SHOP-III

Batch I & II: Working on CNC Laser Engraving Machine.

IV. REFERENCE BOOKS:

1. Hajra Choudhury S.K., Hajra Choudhury A.K. and Nirjhar Roy 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.

V. WEB REFERENCES:

<http://www.iare.ac.in>