COURSE TITLE	**APPLIED WELDING: TECHNIQUES AND PRACTICES**
COURSE CODE	**01ME1408**
COURSE CREDITS	**1**

Objective:

1 To provide students with knowledge and hands-on experience in welding processes, techniques, and safety for industrial applications.

Course Outcomes: After completion of this course, student will be able to:

1 Safely operate welding equipment and tools while applying appropriate protective measures in workshop practice.

2 Perform basic and advanced welding operations (e.g., TIG, MIG, arc welding) with proper technique and accuracy.

3 Apply appropriate control of welding parameters—current, voltage, travel speed, and heat input—to achieve the required weld quality

4 Inspect and identify welding defects using visual and non-destructive testing methods.

Pre-requisite of course: Nil

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	2	0	0	0	50	50

Contents : Unit	Topics	Contact Hours
1	**Applied Aspects of Fusion Welding Processes:** Introduction of welding and its industrial relevance, Introduction to welding production work flow on shop floor, Skill set required to be a welding engineer, production supervisor and quality engineer, hands on exposure of SMAW, GTAW, GMAW processes, Relevance of weld joint preparation and various types of weld joints, Role of shielding gases, welding current, welding voltage and welding speed on the weld bead shape as well as on final weld, Role of codes and standards within welding industry. Making WPS and its importance, process in the fabrication industry	15
2	**Advance Welding processes:** Friction welding, Friction stir welding and allied processes, Utilization of available workshop equipment for non-fusion welding processes, Hands on exposure to non-fusion welding processes i.e. friction and friction stir welding. Activated Gas Tungsten Arc Welding	15
Total Hours		**30**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Performance of SMAW on Mild Steel Material** Performance of SMAW on Mild Steel Material	2
2	**Performance of GTAW on Mild Steel Material** Performance of GTAW on Mild Steel Material	2
3	**Performance of GMAW on Mild Steel Material** Performance of GMAW on Mild Steel Material	2
4	**Performance of Dye Penetrant Testing on Welded Mild Steel Via SMAW, GMAW, GTAW** Performance of Dye Penetrant Testing on Welded Mild Steel Via SMAW, GMAW, GTAW	2
5	**Performance Of Single Side Friction Stir Welding on Aluminium Material** Performance Of Single Side Friction Stir Welding on Aluminium Material	2
6	**Performance Of Double Side Friction Stir Welding on Aluminium Material** Performance Of Double Side Friction Stir Welding on Aluminium Material	2
7	**Performance Of Friction Welding on Lathe Machine** Performance Of Friction Welding on Lathe Machine	2
8	**To Study the Deposition Efficiency of SMAW Process** To Study the Deposition Efficiency of SMAW Process	2
9	**Performance Of Friction Stir Processing on Milling Machine** Performance Of Friction Stir Processing on Milling Machine	2
10	**Performance of Activated GTAW** Performance of Activated GTAW	2
11	**Performance of Activated SMAW** Performance of Activated SMAW	2
12	**Performance of Activated GMAW** Performance of Activated GMAW	2
Total Hours		**24**

Textbook :

1 Welding Hand Book, Volume I and IV, 7th Edition, , ASME, American Welding Society,, 1980

References:

1 Welding, Brazing and Soldering, Welding, Brazing and Soldering, Metal handbook, ASM, 2000

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
10.00	20.00	70.00	0.00	0.00	0.00

Instructional Method:

1 hand on

Supplementary Resources:

1 https://npc.libguides.com/welding-guide/online-resources