Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NMEC529	Unconventional Manufacturing Lab	0	0	3	1.5

Course Objective

To provide practical knowledge on Unconventional Manufacturing and their capabilities.

Learning Outcomes

Upon successful completion of this course, students will:

- Understand the working principle of various Unconventional Manufacturing.
- Be acquainted with the process parameters and the performance measures of Unconventional Manufacturing Processes
- Be able to design different types of Unconventional Manufacturing process.

Unit No.	Topics	Lecture hours	Learning Outcome
1	Dissemination of the lab-specific information and visit to all lab spaces	3	General lab-specific information
2	Experiment on EDM process i. Effect of parameter on MRR, surface roughnes layer thickness and VI plots ii. Single sparks experiment for understanding the removal mechanism.	3	Hands-on-experience in EDM
3	Experiments on micro-ECM: i. Fabrication of micro tools through Electrochem Dissolution ii. Micro hole machining and characterization	3	Hands-on-experience on ECM
4	Experiments USM i. Analysis of material, removal rate for glass sam ii. Engraving operation analysis iii. Investigation on rotary USM	3	Hands-on-experience on USM
5	Programming and Profile cutting in WEDM	3	Hands-on-experience in WEDM
6	Experiments on AWJM i. Programming on profile cutting and analysis iii. Milling with AWJM	3	Hands-on-experience in AWJM
7	Experiments on Micro- Electrochemical Discharge machining to analysis on spark generation, MRR, Surfa roughness and voltage-current plot	3	Hands-on-experience in Micro-Electrochemical Discharge Machining process
8	Experiments on the Laser welding process	3	Hands-on-experience in the laser welding process
9	Experiments on Laser surface glazing/remelting	3	Hands-on-experience in Laser surface glazing/remelting
10	Experiments on Material Cutting operations: i. Plasma arc Cutting process ii. CO2 Laser cutting	3	Hands-on-experience on the unconventional cutting operation
11	Experiments on Laser engraving on metal/ non-metal	3	Hands-on-experience on Laser engraving
12	Data Acquisition to record the temperature/voltage/curr information in different nonconventional process	3	Hands-on-experience in data acquisition
13	Compensation and/or re-experiment	3	Reserved date for compensation and re-experimentation
14	Lab report submission, final examination, and individual viva voce	3	Final evaluation
	Total	**42**	

Text Books:

3. Fundamentals of Machining Processes (Conventional and Nonconventional Processes), Hassan Abdel-Gawad El-Hofy, CRC press
4. Unconventional Machining, P K Mishra

Reference Books:

3. Non-traditional manufacturing processes , Gary F. Benedict, CRC press
4. Fundamentals of modern manufacturing processes, M. P. Groover.