

NON TRADITIONAL MACHINING PROCESS-EL2
Semester II (Production Engineering) SUB CODE: MEPR206-A
Teaching Scheme (Credits and Hours)

| Teaching Scheme | | | | Total Credit | Evaluation Scheme | | | | | Total Marks |
|-----------------|-----|-----|-------|--------------|-------------------|-------|-------|-------|------------|-------------|
| L | T | P | Total | | THEORY | | IE | CIA | PR. / VIVO | |
| Hrs | Hrs | Hrs | Hrs | | Hrs | Marks | Marks | Marks | Marks | |
| 2 | 0 | 0 | 2 | 2 | 3 | 70 | 30 | 0 | 20 | 120 |

LEARNING OBJECTIVES:

The objective of this course is

- To learn various concepts related to modern machining processes & their applications

LESSON PLANNING

| SR.NO | CHAPTER NO | DATE/WEEK | %WEIGTAGE |
|-------|------------|--|-----------|
| 1 | 1,8 | 1 st 2 nd 3 rd | 20 |
| 2 | 2,3 | 4 th 5 th 6 th | 20 |
| 3 | 4 | 7 th 8 th 9 th | 20 |
| 4 | 5,6 | 10 th 11 th 12 th | 20 |
| 5 | 7 | 13 th 14 th 15 th | 20 |

Total hours (Theory): 30, Total hours (Practical):00, Total hours: 30

DETAILED SYLLABUS

| Chap . No. | Topic |
|------------|--|
| 1 | Introduction: Needs for nontraditional machining processes, classification and comparative analysis |
| 2 | Abrasive jet machining: Fundamental principle, application process parameters, MRR models. Water jet machining: Fundamental principle, application process parameters |
| 3 | Chemical machining: Principle of operation, etch ants and mask ants, photochemical process, equipment, applications. |
| 4 | Analysis of material removal: Electrochemical machining: Process principle Dynamics of ECM Process, tool design, applications. |
| 5 | Ultrasonic machining: Physical principles Physical principles of USM, Process parameters, Transducers types materials and design |
| 6 | Horn design: Shaws model of MRR, other applications of Ultrasonic machining |
| 7 | Electrical discharge machining: Operating principles of EDM, Effects of Dielectric fluids, Electrode materials ,power generators, process parameters and their effects, flashing, wire EDM process, applications. Laser Beam Machining |
| 8 | Lasing process: Types of lasers (Gas and solid state), lasing mediums, laser material processing-cutting, drilling, surface treatment, special applications. |

INSTRUCTIONAL METHOD AND PEDAGOGY (Continuous Internal Assessment (CIA) Scheme)

- At the start of course, the course delivery pattern, prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all units while conducting teaching & examination.

- Attendance is compulsory in lectures and Tutorial
- Viva Voce will be conducted at the end of the semester of 30 Marks.
- One internal exam of 30 marks is conducted as a part of Mid semester evaluation.

STUDENTS LEARNING OUTCOMES:

At the end of the course

The students will gain an experience in the implementation of NTM concepts which are applied in the field of production

Reference Books:

- 1.Modern Machining Processes by P.C.Pandey & H.S. Shan, Tata McGraw Hill.
- 2.Advanced Machining Processes by Vijay K.Jain, Allied Publishers.
- 3.Non traditional Manufacturing Processes by G.F. Benedict, Marcel Dekker Inc., NY.
- 4.Advanced Methods of Machining by McGeough, Chapman and Hall, London.
- 5.New Technology by A. Bhattacharya, Institute of Engineers, India.
- 6.Material & Processes in Manufacturing by Paul De Garmo, J.T. Black and Ronald A. Kohser,
- 7.Advanced Machining Processes By Hassan Abdel-Gawad El-Hofy Tata McGraw Hill, ISBN 0071453342 / 9780071453349 PHI

