

## Lesson Plan

**Subject** : **Non Conventional Machining (MEP-402A)**

**Lesson plan Duration** : 15 Weeks

**Work load (lecture) per week** : Lectures: 3 hours/Week

Lecture No	Description
1	Introduction about syllabus, Vision, Mission and PO's
2	<b>Unit 1:</b> Characteristics of conventional machining processes
3	Comparison of conventional and non-conventional machining processes, classification of non-conventional machining processes
4	History of non-conventional processes, advantages of non-conventional machining processes
5	Disadvantages of non-conventional machining processes, applications of nonconventional machining processes.
6	Need of Non-conventional machining processes with examples
7	Ultrasonic Machining, process principle, equipment,
8	Design consideration for tool, tool feed mechanism, abrasive slurry, Liquid media, operation of USM, process parameters, process capabilities,
9	Mechanics of cutting in USM, applications, advantages, disadvantages of USM
10	Metal removal mechanism, Effect of parameters
11	<b>Unit II:</b> Abrasive jet machining (AJM): process principle, equipment, process parameters,
12	Process capabilities, applications of AJM, advantages, disadvantages, Mechanics of cutting in AJM.
12	Water jet machining (WJM): process principle, equipment, process parameters, process capabilities
14	Metal removal rate, applications, advantages, disadvantages of WJM.
15	Abrasive water jet machining (AWJM): process principle, equipment, process parameters,
16	Process capabilities, Metal removal rate, applications of AWJM, advantages and disadvantages of AWJM.
17	Chemical machining: Introduction, process principle
18	Five steps of chemical machining, elements of process
19	Influence of etchant medium, selection of maskant and etchants, chemical blanking

20	Accuracy of chemical blanking, applications of chemical machining, advantages of chemical machining, disadvantages of chemical machining
21	<b>Unit III:</b> Chemical milling, photochemical machining
22	Electrochemical machining (ECM): classification of ECM processes Fundamental principles of ECM,
23	Elements of ECM process, Electro-chemistry of ECM process,
24	Process parameters, process characteristics, tool design, accuracy
25	Determination of metal removal rate, evaluation of metal removal rate of an alloy,
26	Surface finish and work material characteristics
27	Economic consideration, advantage, limitation and application Basics of
28	Electrochemical grinding, deburring and honing.
29	Repeat of tool design, accuracy
30	<b>Unit IV:</b> Electric discharge machining (EDM): Principal and metal removal mechanism, generators
31	Electrode feed control, electrode material, tool electrode tool design
32	EDM wire cutting, surface finish, accuracy and application.
33	Laser beam machining (LBM): Introduction, generation of LASER,
34	Equipment and mechanism of metal removal, LBM parameters and characteristics,
35	Applications, Advantages & limitations.
36	Electron beam machining (EBM): Introduction, Principle
37	Equipment and mechanism of metal removal, applications, advantages and limitations.
38	Repeat of EDM wire cutting, surface finish, accuracy and application.
39	Repeat of generation of LASER