GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

Mechanical Engineering (CAD/CAM)

Subject Name Modern Machining Methods

Sr.No	Course content
1.	INTRODUCTION: Unconventional Machining Process, Need – clarification – Brief overview of all techniques.
2.	MECHANICAL ENERGY BASED PROCESSES: Abrasive Water Jet Machining, Water Jet Machining, Ultrasonic Machining (AJM / WJM/ USM). Working principles – equipments used – process parameters – MRR – Variation in techniques used – Applications.
3	ELECTRICAL ENERGY BASED PROCESSES: Electro Discharge Machining, Working principles – Equipments – Process parameters – MRR – electrodes/ tools / power circuits – tool wear – Dielectric- flushing- Wire cut EDM – Applications.
4	CHEMICAL AND ELECTRO-CHEMICAL ENERGY BASED PROCESSES: Chemical Machining, Electro- Chemical Machining – Etchants- maskant- Techniques of applying maskants – Process parameters – MRR – Applications. Principles of ECM-MRR-Electrical circuit – process parameters – ECG and ECH applications.
5	THERMAL ENERGY BASED PROCESSES: Laser Beam Machining, Plasma Arc Machining and Electron Beam Machining. Principles – equipments – types – beam control techniques- applications.

Sr.No	Practicals
1.	Introduction to unconventional machining.
2.	Influence of parameters in Abrasive Jet Machining.
3.	Influence of parameters in Ultrasonic Machining.
4.	Influence of parameters in Electro-Discharge Machining.
5.	Influence of parameters in Wire-cut EDM.
6.	Study of Chemical and Electro-chemical Machining.
7.	Study of Laser Beam Machining.
8.	Study of Plasma Arc Machining.
9.	Study of Electron Beam Machining.
10.	Study of Hot Machining.

REFERENCE BOOKS:-

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