GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: VI

Industrial Engineering

Subject Name: **Metal Cutting & Advanced manufacturing processes**
Subject Code: **161504**

Teaching Scheme				Evaluation Scheme		
Theory	**Tutorial**	**Practical**	**Total**	**University Exam (Theory) (E)**	**Mid Sem Exam (Theory) (M)**	**Practical (I)**
4	0	2	6	70	30	50

Sr. No	Course Content	Total Hrs.
1.	**Metal Cutting:-** Theory of metal cutting, Different methods of cutting, Types of chips, Cutting parameters, chip thickness ratio, Chip reduction co-efficient, Cutting and power, specific pressure and power in machining operations, Merchant's circle diagram, Machinability, Cutting fluids	20
2.	**Tools:** Tool materials, Tool geometry, Tool wear and tool life economical cutting speeds, jigs and fixtures – types, general principles of design and advantages, Tool room functions and organization.	14
3.	**Advanced machining:** Introduction to CAD, CAM, and CIM, Numerical controlled (NC), Computerised numerical controlled (CNC), and Direct Numerical controlled (DNC) machines	10
4.	**Advanced manufacturing processes:** Electro-Chemical Machining (ECM), Electro Discharge Machining (EDM), Wire-cut Electro Discharge machining, Electro Chemical Grinding (ECG), Ultrasonic machining, Abrasive Jet Machining, Electron Beam Machining, Plasma Arc machining, Explosive forming, Electro magnetic forming, Hydro forming, high velocity forming, Spark erosion	20

Term Work:

The T.W. will be based on the above syllabus.

Practical:

It will be based on T.W. & above syllabus.

Reference Books:

1. Workshop Technology by W.A.J. Chapman
2. Machine tool engineering by G.R. Nagpal, Khanna Publishers
3. Elements of workshop technology part-II by H.S.Chaudhary
4. A text book of production engineering by Pandey and sigh
5. New Technology by A. Bhattacharya
6. Production Technology by H.M.T.
7. Metal cutting by Sen and Bhattacharya
8. Principles of Machine tools by Sen and Bhattacharya.