SCHEME OF COURSE WORK

Course Title	: Advanced Manufacturing Technology		
Course Code	: 13ME2113	L P C	: 4 0 3
Program:	: M.Tech.		
Specialization:	: CAD/CAM		
Semester	: I		

Course Outcomes (COs):

At the end of the course, the student will be able to

1	Select appropriate cutting tool materials and cutting fluids in machining operations
2	Explain the applications of special machining and high speed machining processes
3	Explain various non-traditional and micro machining processes
4	Identify the mechanism of metal removal
5	Identify features and applications of non-traditional machining

Program Outcomes (POs)

At the end of the program, the students in CAD/CAM will be able to

1. acquire fundamentals in the areas of computer aided design and manufacturing
2. apply innovative skills and analyze computer aided design and manufacturing problems critically
3. identify, formulate and solve design and manufacturing problems
4. carry out research related to design and manufacturing
5. use existing and recent CAD/CAM software
6. collaborate with educational institutions, industry and R&D organizations in multidisciplinary teams
7. apply project and finance management principles in engineering projects
8. prepare technical reports and communicate effectively
9. engage in independent and life-long learning and pursue professional practice in their specialized areas of CAD/CAM
10. exhibit accountability to society while adhering to ethical practices
11. act independently and take corrective measures where necessary

Course Outcome versus **Program Outcomes:**

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO-1	M	M	S	S	M	M						
CO-2	M	S	M	S	M				M			
CO-3	M	M	M	S	M	M			M			
CO-4	M	M	M	S	M				M			
CO-5	M	S	M	S	M				M			

S - Strongly correlated, *M* - *Moderately* correlated, *Blank* - *No correlation*

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Teaching-Learning and Evaluation

WEEK	TOPIC / CONTENTS	COURSE OUTCOMES	SAMPLE QUESTIONS	TEACHING-LEARNING STRATEGY	ASSESSMENT METHOD & SCHEDULE

1	Fundamentals of machining: Introduction, Mechanics of cutting.	CO1	1. Explain the Process of Mechanics of Cutting. 2. Define cutting force. 3. Explain the definitions of tool life, wear and failure. 4. Define high speed steels and cast cobalt alloys.	Lectures , , Seminar	
2	Cutting forces and power, Temperatures in cutting.	CO1			
3	Tool life, wear and failure, surface finish, integrity and Mach inability.	CO1			
4	Cutting tool materials and cutting fluids: Introduction, High-Speed Steels, Cast-Cobalt alloys.	CO2			
5	Carbides, Coated tools, Alumina-based ceramics, Cubic Boron Nitride.	CO2	1. Explain the carbides and coated tools. 2. Explain diamond and whisked reinforced tool materials. 3. What is reconditioning of tools and cutting fluids?	Lectures , , Seminar	Assignment (week 7)
6	Silicon Nitride based ceramics,Diamond, Whisker reinforced Tool materials.	CO2			
7	Reconditioning of tools, Cutting fluids.	CO2			
8	Mid-Test 1	CO-1, CO-2			
9	Special machining: Deep hole drilling, Gun drills, Gun boring, Trepanning, Honing,Lapping, Super Finishing,AFM,MAF,Burnishing, Broaching.	CO3	1. Define trepanning, honing, lapping, super finishing. 2. Give the design of tools for high speed machining. 3. Explain Ultra Precision Machining.	Lectures , Seminar	
10	High speed machining, Application of HSM, Tools for HSM, Design of tools for HSM, High speed and High performance grinding, Ultra	CO3			Seminar (week

	Precision Machining.				11-16)
11	Non-traditional machining: Introduction – USM, WJM, AWJM, LBM, EBM, plasma machining, hybrid machining process.	CO4	1. Explain USM and LBM process. 2. Explain EDM and ECM process. 3. Givevarious micro machining process.	Lectures , , Seminar	
12	Electro-discharge machining (EDM) and Electro-chemical machining (ECM) – mechanism of metal removal, Characteristic features and applications.	CO4			
13	Micro machining: various micro machining processes, Application of micro machining in semi conductor IC technology.	CO5			
14	Micro actuator and Micro sensors, CVD, PVD and Ion implantation.	CO5	1. Define micro actuator and micro sensors. 2. Explain CVD and PVD process.	Lectures , Seminar	
15	Mid-Test 2	CO-3, CO-4, CO-5			
16/17	END EXAM	All Cos			