

**DEPARTMENT OF PRODUCTION ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI-620015.**

COURSE OUTLINE							
Course Title	Advanced Machining Technology						
Course Code	PR601	No. of Credits	03				
Department	Production Engineering	Faculty	Dr. V. Anandkrishnan				
Pre-requisites Course Code	NIL						
Course Coordinator(s) (if, applicable)							
Email Id	krishna@nitt.edu	Contact No.	9842167599				
Course Type	Core course	<input checked="" type="checkbox"/>	Program Elective	<input type="checkbox"/>	Open Elective	<input type="checkbox"/>	Minor
Course overview							
The course delivers the knowlegde in the fundamentals of traditional, non-traditional and advanced machining technologies in the way of identifying the parametric influence in line with the industrial production needs.							
Course objectives							
<ul style="list-style-type: none"> ➤ To identify the different machining processes and it suitability. ➤ To know the various effect of parameters on the machining. ➤ To learn the applications, limitations of the manufacturing processes. 							
Course Outcomes							
<ul style="list-style-type: none"> ➤ Select suitable machining process for suitable materials ➤ Select optimum parameters for the respective machining process ➤ Summarizes the merits and demerits of the non-traditional manufacturing process 							

Lecture	Week	Topic	Mode of Delivery
1	Week 1	Introduction to machining, conventional – Non conventional	Lecture - PPT, Video
2		Tool nomenclature, cutting forces	
3		Thermal aspects of machining	
4		Tool materials	
5	Week 2	Tool life and tool wear	
6		High speed machining	
7		Ultrasonic Machining	
8		Water Jet Machining	
9	Week 3	Abrasive Jet Machining	
10		Abrasive Water Jet Machining	
11		Ice Jet Machining	
12		Magnetic Abrasive Finishing	
13	Week 4	Cycle Test 1	

14		Basics of Chemical and Electrochemical Processes	Lecture - PPT, Video	
15		Chemical Milling		
16		Photochemical Milling		
17	Week 5	Electropolishing		
18		Electrochemical Machining		
19		Electrochemical Drilling		
20		Shaped Tube Electrolytic Machining		
21	Week 6	Basics of thermal process		
22		Electric Discharge Machining – Die sinking		
23		Electric Discharge Machining – wire electric		
24		Laser Beam Machining		
25	Week 7	Electron Beam Machining		
26		Plasma Beam Machining		
25		Ion Beam Machining		
26		Cycle Test 2		
27	Week 8	Basics of hybrid process		
28		Electrochemical Grinding		
29		Electrochemical Honing		
30		Electrochemical Superfinishing		
31	Week 9	Electrochemical Buffing		
32		Ultrasonic Assisted ECM		
33		Laser Assisted ECM		
34		Electroerosion Dissolution Machining		
35	Week 10	Abrasive Electrodischarge Machining		
36		EDM with Ultrasonic Assistance		
		End Semester Examination		

COURSE ASSESSMENT METHODS				
S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Cycle Test 1	Week 4	1 hour	20 marks
2.	Cycle Test 2	Week 7	1 hour	20 marks
3.	Assignments	Week 3&6	1 week	10 marks
4.	End Semester Examination	Week 10	3 hours	50 marks
Total				100 marks

ESSENTIAL READINGS: Textbooks, Reference Books Website addresses, journals, etc.
1. Bhattacharya "Metal Cutting Theory and Practice", New Central Book Agency (p) Ltd., Calcutta 1984.
2. Boothroy .D.G. and Knight. W.A "Fundamentals of Machining and Machine tools", Marcel Dekker, New York, 1989.
3. Hassan Abdel – Gawad El-Hofy "Advanced Machining Processes", McGraw, New York, 2005.
4. Wellar, E.J. "Non-Traditional Machining Processes", Society of Manufacturing Engineers Publications, 2nd Edition, Michigan, 1984.
5. Metals Handbook. Vol. 16, Machining. Materials Park; OH: ASM International, 1995.
6. Kalpakjian, S "Manufacturing Process for Engineering Materials", MA: Addison-Wesley, 1997.
7. Brown, J "Advanced Machining Technology Handbook", New York: McGraw-Hill, 1998.
8. McGeough, J "Advanced Methods of Machining", London. New York: Chapman and Hall, London, 1988.
9. Rumyantsev, E and Davydov, A "Electrochemical Machining of Metals", Moscow: Mir Publishers, 1984.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

1. Class committee meetings
2. Feedback through MIS

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

Attendance:

1. Attendance will be taken by the faculty in all the contact hours and the students are expected to attend all the hours.
2. Minimum 75% of attendance need to be maintained in the contact hours.
3. Any student, who fails to maintain 75% and secured more than 50% marks in the assessments conducted will be permitted to attend the final written exam.
4. Students not having sufficient attendance (75%) at the end of the semester and also fail to score the required marks (50%) in assessments (as mentioned in Point: 3, above) will have to RE-DO the course.

Assessment:

1. Attending all the assessments are MANDATORY for every student.
2. One Compensation Assessment (CPA) will be conducted for those students who are being physically absent for any of the assessment and it covers the entire contents of the course.
3. At any case, CPA will not be considered as an improvement test.
4. Relative grading will be adopted for the course.

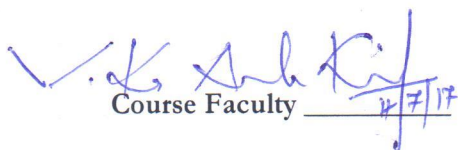
Academic Honesty & Plagiarism:

1. All the students are expected to be genuine during the course work. Taking of information by means of copying simulations, assignments, looking or attempting to look at another student's paper or bringing and using study material in any form (paper, mobile phone etc.) for copying during any assessments is considered dishonest.
2. Tendering of information such as giving one's program, simulation work, assignments to another student to use or copy is also considered dishonest.
3. Preventing or hampering other students from pursuing their academic activities is also considered as academic dishonesty.
4. Any evidence of such academic dishonesty will result in the loss of marks on that assessment. Additionally, the names of those students so penalized will be reported to the class committee chairperson and HoD of the concerned department.

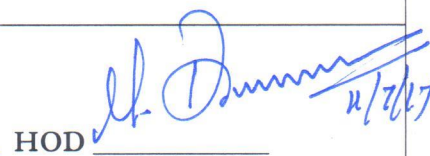
ADDITIONAL COURSE INFORMATION

Contact the Course Teacher : Dr.V.Anandakrishnan
Room No.: MTB304 / 2nd Floor / Manufacturing Technology Building
Timings: Office Hours
Email ID: krishna@nitt.edu
Telephone No.: 0431-250-3521

FOR SENATE'S CONSIDERATION


Course Faculty _____


CC-Chairperson _____


HOD _____