

DEPARTMENT OF PRODUCTION ENGINEERING
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE PLAN- PART I			
Course Title	MACHINING TECHNOLOGY		
Course Code	PRPC12	No. of Credits	03
Course Code of Pre-requisite subject(s)	PRIR15		
Session	July. 2018	Section (if, applicable)	A & B
Name of Faculty	Dr. V. Anandakrishnan	Department	Production
Email	krishna@nitt.edu	Telephone No.	0431-2503521
Name of Course Coordinator(s) (if, applicable)	-		
E-mail		Telephone No.	
Course Type	<input checked="" type="checkbox"/> Core course <input type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
<p>Theory of metal cutting: Introduction – Machine tools – Cutting tools – Tool geometry - Orthogonal and oblique cutting – Mechanics of cutting – Types of chips – Cutting speeds and feeds – Tool failure, Tool life – Tool materials – Cutting fluids.</p> <p>Turning operations: Introduction – Lathe – Types of lathes – Size of a lathe – Work holding devices – Lathe operations – Metal removal rate and machining time calculations.</p> <p>Drilling and allied operations: Introduction – Drilling machines – Types – Drills – Drilling machine operations – Boring, Reaming and other operations – Boring machine – Types.</p> <p>Introduction – Milling machine – Types – Milling cutters – Milling process – Milling machine operations.</p> <p>Finishing processes: Introduction – Abrasive machining – Abrasives – Grinding wheel – Grinding machines – Types – Fine finishing operations.</p>			
COURSE OBJECTIVES			
<ul style="list-style-type: none"> ➤ To perform different machining operations like turning, drilling, milling and finishing. ➤ To predict tool life and tool failure ➤ To select suitable cutting fluid for respective materials 			

COURSE OUTCOMES (CO)	
Course Outcomes	Aligned Programme Outcomes (PO)
1. Summarize the theory of metal cutting and compute cutting forces involved from Mohr's circle	1,,2,3,6,11
2. Recognize various parts of lathe list the accessories and explain various operations performed	1,3,5
3. Explain the construction of drilling, boring, reaming and milling machines and explain operations performed	1,3,5

COURSE PLAN – PART II

COURSE OVERVIEW

Machining plays a significant role in the field of manufacturing which is inevitable even in modern manufacturing era. Fundamentals of machining is mandate for a production engineer and due to which this course conveys the basics of machining technology including the knowledge of different types of machines tools, working principles, feasible operations, tools, fixtures and other work/tool holding devices. The imparted knowledge will create awareness on the need of identification/selection of appropriate machining process/operations.

COURSE TEACHING AND LEARNING ACTIVITIES

S. No.	Week/Contact Hours	Topic	Mode of Delivery
1.	Week 1	Introduction to metal cutting	Lecture - C&T/ PPT, Video
2.	Week 1	Machine tools	
3.	Week 1	Cutting tools	
4.	Week 2	Tool geometry	
5.	Week 2	Orthogonal and oblique cutting	
6.	Week 2	Mechanics of cutting	
7.	Week 3	Types of chips	
8.	Week 3	Cutting speeds and feeds	
9.	Week 3	Tool failure, Tool life	
10.	Week 4	Problems related to machine tool life calculations	
11.	Week 4	Tool materials	

12.	Week 4	Cutting fluids – properties, types	Lecture - C&T/ PPT, Video
13.	Week 5	Introduction to turning operations	
14.	Week 5	Lathe	
15.	Week 5	Types of lathes	
16.	Week 6	Size of a lathe	
17.	Week 6	Work holding devices	
18.	Week 6	Lathe operations	
19.	Week 7	Metal removal rate and machining time calculations	
20.	Week 7	Cycle test 1	
21.	Week 7	Introduction to Drilling and allied operations	
22.	Week 8	Drilling machines and its types	
23.	Week 8	Types of Drills	
24.	Week 8	Drilling machine and its parts, operations	
25.	Week 9	Boring operations	
26.	Week 9	Reaming operations	
27.	Week 9	Other drilling operations	
28.	Week 10	Boring machine and its types	
29.	Week 10	Introduction to milling and its operations	
30.	Week 10	Milling machine and its parts	
31.	Week 11	Types of milling machine	
32.	Week 11	Milling cutters	
33.	Week 11	Milling process	
34.	Week 12	Milling machine operations	

35.	Week 12	Cycle test 2	Lecture - C&T/ PPT, Video
36.	Week 12	Introduction to Finishing processes	
37.	Week 13	Abrasive machining	
38.	Week 13	Abrasives and its types	
39.	Week 13	Grinding wheel and its types	
40.	Week 14	Grinding machines and its parts	
41.	Week 14	Fine finishing operations	
42.	Week 14	Re-Test	

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Cycle Test 1	Week 7	1 hour	20 marks
2.	Cycle Test 2	Week 12	1 hour	20 marks
3.	Assignments	Week 6 & 11	1 week	10 marks
4.	Re-Test	Week 14	1 hour	20 marks
5.	Final Examination - Theory	Week 14	3 hours	50 marks
			Total	100 marks

***mandatory; refer to guidelines on page 4**

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

1. Class committee meetings
2. Feedback through MIS

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)

Mode of Correspondence (email/ phone etc)

krishna@nitt.edu
0431-2503521

Attendance

1. At least 75% attendance in each course is mandatory.
2. A maximum of 10% shall be allowed under On Duty (OD) category.
3. Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

Compensation 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 due to valid reasons 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.

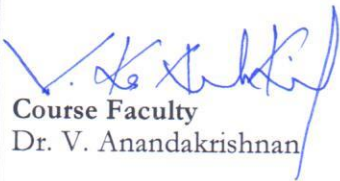
Academic Honesty & Plagiarism


1. Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
2. Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
3. The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
4. The above policy against academic dishonesty shall be applicable for all the programmes.


ADDITIONAL INFORMATION

Contact the Course Teacher : Dr. V. Anandakrishnan
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Timings: Office Hours
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FOR APPROVAL


Course Faculty
Dr. V. Anandakrishnan


CC-Chairperson
Dr. C. Sathiyarayanan


HOD
Dr. P. Sathiyar