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

COURSE OUTLINE				
Course Title	**PRPC 12 MACHINING TECHNOLOGY**			
Course Code	PRPC 12	No. of Credits	03	
Department	Production Engineering	Faculty	Dr. R. Manivannan	
Pre-requisites Course Code	PRIR15 Introduction to Production Engineering			
Course Coordinator(s) (if, applicable)				
Email Id	manivannanr@nitt.edu	Contact No.	9786697722	
Course Type	Core course		Elective course	

Course overview

Every production engineer should know the available process for making a product. A detailed understanding of various machining processes and machine tools is very essential. This course discusses the various machining process that can be used in a material to make it as a product.

Course objectives

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

Summarize the theory of metal cutting and compute cutting forces involved from Mohr's circle.

Recognize various parts of lathe list the accessories and explain various operations performed.

Explain the construction of drilling, boring, reaming and milling machines and explain operations performed

S.No	Week	Topic	Mode of Delivery
1	1st	Introduction to Machining Technology	PPT, C&T
2		Introduction: Theory of metal cutting	PPT, C&T
3		Machine tools and Cutting tools	PPT, C&T
4	2nd	Tool geometry, Orthogonal and oblique cutting	PPT, C&T
5		Mechanics of cutting	PPT, C&T
6		Types of chips	PPT, C&T
7	3rd	Cutting speeds and feeds	PPT, C&T
8		Tool failure, Tool life	PPT, C&T
9		Tool materials	PPT, C&T
10	4th	Cutting fluids	PPT, C&T
11		Introduction: Turning operations	PPT, C&T
12		Lathe and Types of lathes	PPT, C&T
13	5th	Size of a lathe and Work holding devices	PPT, C&T
14		Lathe operations	PPT, C&T
15		Metal removal rate and machining time Calculations	PPT, C&T

16	**CYCLE TEST 1**		
17	6th	Introduction: Drilling and allied operations	PPT, C&T
18		Drilling machines and its types	PPT, C&T
19		Drilling machine operations	PPT, C&T
20	7th	Boring, Reaming and other operations	PPT, C&T
21		Boring machine and Types	PPT, C&T
22		Introduction: Milling machine	PPT, C&T
23	8th	Types of Milling machine	PPT, C&T
24		Milling cutters	PPT, C&T
25		Milling process and operations.	PPT, C&T
26	**CYCLE TEST 2**		
27	9th	Introduction: Finishing processes	PPT, C&T
28		Abrasive machining	PPT, C&T
29		Abrasives	PPT, C&T
30	10th	Grinding wheel	PPT, C&T
31		Grinding machines and Types	PPT, C&T
32		Fine finishing operations	PPT, C&T

COURSE ASSESSMENT METHODS					
S.No.	**Mode of Assessment**	**Syllabus**	**Week**	**Duration**	**% Weightage**
1	Cycle Test 1	Theory of metal cutting, Turning operations	5th Week	60 Minutes	20
2	Cycle Test 2	Drilling and allied operations, Milling operations.	8th Week	60 Minutes	20
3	Assignment	Finishing processes	12th Week	30 Minutes	10
4	Descriptive Type Examination (End Semester)	–		120 Minutes	50
Total Assessment				6 Hrs	100

ESSENTIAL READINGS: Textbooks, Reference Books Website addresses, journals, etc.

Text Books

1. Nagendra Parashar, and Mittal, R.K, Elements of manufacturing processes, Prentice Hall of India Private Limited,1st Edition, 2003.
2. Hajra Choudhury SK, Bose HK and Hajra Choudhury AK, Elements of Workshop Technology, Vol.II, Media promoters and Publishers Pvt. Ltd. 12th Edition, 2007.

Reference Books

1. Khanna, O.P and Lal, M, A Text book of Production Technology, Vol.II, DhanpatRai Publications (P) ltd.,1st Edition, 2009.
2. H.M.T, Production Technology, Tata McGrawHill Publishing Co.Ltd, 1st Edition, 2008.
3. ASM Handbook, Machining.

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

Feedback from the students during class committee meetings

Anonymous feedback through questionnaire

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

CORRESPONDENCE

1. All the students are advised to check their NITT WEBMAIL regularly. All the correspondence (schedule of classes/ schedule of assessment/ course material/ any other information regarding this course) will be done through their webmail only.

2. Queries (if required) to the course teacher shall only be emailed to the email id specified by the teacher.

Course Policy (including plagiarism, academic honesty, attendance, etc.)

Examination:

- Students must attend all the examinations (cycle tests, surprise test and end semester examination). If a student fails to attend any of the cycle test due to genuine reason he/she will be permitted to write re-test and the portion will be the combined portion of cycle test 1 and 2.
- Students should submit assignments as per the instructions given in the class. Late submission is not permitted.

Attendance:

- The minimum attendance for appearing for the semester examination is 75%.
- Those students, whose attendance falls below 75% but above 50% in the course, shall attend mandatory classes before the semester examinations to qualify to write semester exam.
- The students who are having attendance less than 50% has to redo the course in the next semester or academic year (at the time of offering the course).
- The Institute follows relative grading with flexibility given to teachers to decide the mark ranges for grades. The assessment of the course will be done on the basis of marks.

Correspondence

- All the correspondence (schedule of classes/schedule of assessment course material/ any other information regarding this course) will be done through their class representative.

ADDITIONAL COURSE INFORMATION

Students can reach course coordinator by fixing appointment through E-mail manivannanr@nitt.edu or phone 9786697722

FOR APPROVAL

Course Faculty _____ **CC-Chairperson** _____

HOD _____