NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF PRODUCTION ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	**B.Tech. (Minor in Production Engineering)**		
Course Title	**CAD, CAM and CAE (Theory & Lab)**		
Course Code	**PRMI11**	**No. of Credits**	**03**
Course Code of Pre-requisite subject(s)	-		
Session	**January 2019**	**Section (if, applicable)**	-
Name of Faculty	**Dr. V. Anandakrishnan**	**Department**	**Production Engineering**
Official Email	**krishna@nitt.edu**	**Telephone No.**	**0431-2503521**
Name of Course Coordinator(s) (if, applicable)	-		
Official E-mail		**Telephone No.**	
Course Type (please tick appropriately)	☐ **Core course**	☐ **Elective course**	☑ **Minor Course**

Syllabus (approved in BoS)

Basic concepts of CAD, CAD workstation, CAD software, application of CAD, Interactive graphics: point plotting techniques, Transformations techniques, viewing operations.

Geometric modeling: Wireframe modeling, Surface modeling, Solid modeling. Graphics standards, Parametric design, Visual realism.

Computer aided manufacturing: NC/CNC, computer aided process monitoring - adaptive control, computer-aided process planning.

Production planning - capacity planning - shop floor control - computer integrated manufacturing systems, application.

Finite element modeling and analysis: types of analysis, degrees of freedom, element and structure-stiffness equation, assembly procedure. Database concepts and data base management systems - SQL.

LAB EXERCISES: Part modelling using CAD, Turning operation using CNC, Engineering analysis using CAE

COURSE OBJECTIVES

- To understand geometric modelling and graphic standards of CAD systems
- To understand basics of CAM
- To understand finite element modelling and DBMS

MAPPING OF COs with POs	
Course Outcomes	**Programme Outcomes (PO)** (Enter Numbers only)
1. Summarize the concepts and applications of CAD and modelling	1,4,6
2. CNC code generation for CNC Turning	5,9,11
3. Finite element analysis using software	2,7

COURSE PLAN – PART II

COURSE OVERVIEW

COURSE TEACHING AND LEARNING ACTIVITIES (Add more rows)

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week 1	Basic concepts of CAD	Lecture - C&T/ PPT, Practical – 2 Hrs/week
2	Week 1	Basic concepts of CAD workstation,	
3	Week 1	Basic concepts of CAD software	
4	Week 2	Interactive graphics: point plotting techniques	
5	Week 2	Interactive graphics: Transformations techniques	
6	Week 2	Interactive graphics viewing operations	
7	Week 3	Geometric modeling: Wireframe modeling	
8	Week 3	Geometric modeling: Surface modeling	
9	Week 3	Geometric modeling: Solid modeling	
10	Week 4	Graphics standards	
11	Week 4	Parametric design	
12	Week 4	Visual realism	
13	Week 4	*Part modelling using CAD*	
	Week 5	**CYCLE TEST 1**	
14	Week 6	Basic concepts of Computer aided manufacturing	
15	Week 6	NC/CNC	
16	Week 6	computer aided process monitoring - adaptive control	
17	Week 7	computer-aided process planning	
18	Week 7	Basic concepts of Production planning	
19	Week 7	capacity planning	
20	Week 7	shop floor control	

21	Week 8	computer integrated manufacturing systems	Lecture - C&T/ PPT, Practical – 2 Hrs/week
22	Week 8	Applications of Production planning	
23	Week 8	*Turning operation using CNC*	
	Week 8	**CYCLE TEST 2**	
24	Week 9	Basic concepts of Finite element modeling and analysis	
25	Week 9	Types of FEM analysis	
26	Week 9	Degrees of freedom	
27	Week 9	Element and structure-stiffness equation	
28	Week 10	Assembly procedure	
29	Week 10	Database concepts	
30	Week 10	Data base management systems	
31	Week 10	SQL.	
32	Week 10	*Engineering analysis using CAE*	

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1.	Continuous Internal Assessment			(50)
	Cycle Test 1	Week 5	1 hour	18.75
	Cycle Test 2	Week 8	1 hour	18.75
CPA	Compensation Assessment*	Week 10	1 hour	*18.75*
				12.50
2.	Final Assessment *		Total (75% Theory+25% Practical)	(50)
	Final Examination - Theory	Week 11	3 hours	37.50
	Final Examination – Practical	Week 11	2 hours	12.50

***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 (including compensation assessment to be specified)

MODE OF CORRESPONDENCE (email/ phone etc)

krishna@nitt.edu
0431-2503521

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.
4. Relative grading will be adopted for the course.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

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

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- 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.
- The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION, IF ANY

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 APPROVAL

Course Faculty Dr.V.Anandakrishnan	CC- Chairperson	HOD

Guidelines

a) The number of assessments for any theory course shall range from 4 to 6.

b) Every theory course shall have a final assessment on the entire syllabus with at least 30% weightage.

c) One compensation assessment for absentees in assessments (other than final assessment) is mandatory. Only genuine cases of absence shall be considered.

d) The passing minimum shall be as per the regulations.

B.Tech. Admitted in				P.G.
2018	2017	2016	2015	
35% or (Class average/2) whichever is greater.		(Peak/3) or (Class Average/2) whichever is lower		40%

e) Attendance policy and the policy on academic dishonesty & plagiarism by students are uniform for all the courses.

f) Absolute grading policy shall be incorporated if the number of students per course is less than 10.

g) Necessary care shall be taken to ensure that the course plan is reasonable and is objective.