

DEPARTMENT OF PRODUCTION ENGINEERING

COURSE PLAN – PART I					
Name of the programme and specialization	B.Tech Production Engineering				
Course Title	COMPUTER AIDED DESIGN AND ENGINEERING (Theory & Lab)				
Course Code	PRPC26 No. of Credits 3				
Course Code of Pre- requisite subject(s)	CSIR11 Basics of Programming (Theory & Lab)	·			
Session	January 2020	Section (if, applicable)	Α		
Name of Faculty	V.Murugabalaji	Department	Production Engineering		
Official Email	murugabalaji@nitt.edu	Telephone No.	9597675365		
Name of Course Coordinator(s) (if, applicable)					
Official E-mail		Telephone No			
Course Type (please tick appropriately)					
Syllabus (approved in	BoS)				
Fundamentals of computer - configurations - workstations - data communications - input/output devices, display technology, CAD software. Interactive graphics - point plotting techniques. Transformations techniques, viewing operations: window, viewport and clipping, visual realism Hidden line/surface removal, shading and colour models. Computer drafting through high level languages. Geometric modeling: Wireframe modeling, Surface modeling: Representation of curves and surfaces, design of curves: cubic splines, bezier curves and B spline, design of surfaces. Solid modeling: Constructive solid geometry (C-rep) and Boundary representation (B-rep). Graphics standards: GKS, DXF and IGES standards - Parametric design programmes. 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.					
COURSE OBJECTIVES					
 To understand various hardware and software that serve as components of CAD system. To understand plotting, transformations techniques, geometric modeling. To understand graphic standards, finite element modeling and DBMS. 					
MAPPING OF COs with POs					
Course Outcomes (PO)					
1. Summarize the concepts and applications of CAD.			,		



2. Elaborate fundamental of computers, networks, transformations techniques, geometric modeling solid modeling and finite element modeling	1,4,6
3. Distinguish various concepts and techniques used for Product design and to develop product design skills.	1,4,6

COURSE PLAN - PART II

COURSE OVERVIEW

Computer aided design and Engineering is an important tool used to create virtual 3D objects and perform analysis on 3D CAD model. This tool offers more design freedom to model the complicate shapes and provides brief introduction about finite element methods and its applications.

This course enables students to understand various techniques used in CAD modelling and Finite element modelling.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No	Week/Contact Hours	Topic	Mode of Delivery
1	1 / 3hrs	Fundamentals of computer - configurations - workstations - data communications - input/output devices, display technology, CAD software and lab practice	C&T/ PPT
2	2 / 3hrs	Interactive graphics - point plotting techniques and lab practice	C&T/ PPT
3	3 / 3hrs	Transformations techniques and lab practice	C&T/ PPT
4	4 / 3hrs	viewing operations: window, viewport and clipping, visual realism and lab practice	C&T/ PPT
5	. 5 / 3hrs	Hidden line/surface removal, shading and colour models. Computer drafting through high level languages and lab practice	C&T/ PPT
6	6 / 3hrs	Geometric modeling: Wireframe modeling, S u r f a c e modeling: Representation of curves, design of curves cubic splines, bezier curves and B spline, Representation of curves and surfaces and lab practice	C&T/ PPT
7	7 / 3hrs	Time study and production study Representation of surfaces and design of surfaces and lab practice	C&T/ PPT



8	8 / 3hrs	Solid modeling: Constructive solid geometry (C-rep) and Boundary representation (B-rep) and lab practice	C&T/ PPT
9	9 / 3hrs	Graphics standards: GKS, DXF and IGES standards - Parametric design programmes and lab practice	C&T/ PPT
10	10 / 3hrs	Finite element modeling and analysis: types of analysis, degrees of freedom, element and structure- stiffness equation, assembly procedure and lab practice	C&T/ PPT
11	11 / 3hrs	Database concepts and data base management systems – SQL and lab practice	C&T/ PPT
12	12 / 3hrs	lab practice	C&T/ PPT

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle Test 1	4 th week	1 hr	20%
2	Cycle Test 2	8 th week	1 hr	20%
3	Assignment	Once in 4 Week		10%
СРА	Compensation Assessment*	10 th week	1 hr	20%
4	Lab Practice	During regular lab practice		20%
5	Final Assessment *	12 th week	3 hr	30%

*mandatory; refer to guidelines on page 4

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

- Course exit survey will be collected at the end of the semester
- Feedback during class committee meeting

COURSE POLICY (including compensation assessment to be specified)

- Attending classes regularly and continuously is required for the students to understand the concepts.
- Attendance will be taken in every class. If the student is not able to maintain 75%



attendance, he/she is required to write the compensation assessment and obtain a minimum of 15 marks to become eligible to write the final assessment.

- Participation in the discussions is mandatory during the tutorial classes.
- Strict academic disciplines have to be maintained inside the class room.
- If any student is not able to attend any of the continuous assessments (1, 2, and 3) due
 to genuine reason, student is permitted to attend the compensation assessment with %
 weightage equal to maximum of the CAs. However, a student absent for more than one
 CAs, maximum of the % weightage among the assessments for which the student was
 absent will be considered for computing marks for CA.
- Reassessment shall be conducted for failed / absented (in final assessment) in the beginning of next session. Failed (in final assessment) candidates shall get a maximum of E grade in the reassessment

<u>ATTENDANCE POLICY</u> (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.

programmes.
ADDITIONAL INFORMATION, IF ANY
FOR APPROVAL
Course Faculty CC- Chairperson _ C - S. Tr. NV HOD _ HO
Course Faculty CC- Chairperson HOD 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.