

**FR. Conceicao Rodrigues College Of Engineering**

Father Agnel Ashram, Bandstand, Bandra-west, Mumbai-50

**Department of Production Engineering**

**T.E. (Production) (semester V) (2019-2020)**

**Practical Plan**

**Subject: CAD/CAM/CIM (PEL503)**

**Credits-01**

## **Syllabus**

### **Objectives:**

1. To introduce new and exciting field of Intelligent CAD/CAM/CAE with particular focus on engineering product design and manufacturing.
2. To develop a holistic view of initial competency in engineering design by modern computational methods.
3. To develop New API for CAD

**Outcomes:** Learner will be able to...

1. Identify proper computer graphics techniques for geometric modelling.
2. Transform, manipulate objects as well as store and manage data.
3. Create CAM Toolpath and prepare NC- G code
4. Apply rapid prototyping and tooling concepts in any real life applications.
5. Identify the tools for Analysis of a complex engineering component.

### **List of Exercises**

1. Programming for transformations,
2. API on Creating As built joints, Slider Joint Motion
3. Get the physical Properties API
4. Get the circle and arc data from the edge
5. Sketch spline through points creation : API
6. Solid modeling using any 3D modeling software
7. Part programming and part fabrication on CNC trainer (Turning / Milling)
8. Geometrical optimization of any mechanical component using computer aided engineering concepts. (Shape optimization)
9. Development of physical 3D mechanical structure using any one of the rapid prototyping processes.

### **Term Work**

Term work shall consist of

- a. Any four exercises from 1 to 6 of above list
- b. Part programming and part fabrication on CNC trainer
- c. A course project in a group of not more than four students based on 8 and 9 of above list

The distribution of marks for term work shall be as follows:

- Exercises : 15 Marks
- Course Project : 05 Marks
- Attendance : 05 Marks

**Assessment:**

**End Semester Practical/Oral Examination:**

1. Each student will be given a small task of design based on syllabus, which will be assessed by pair of examiners during the oral examination.
2. Distribution of marks for practical-oral examination shall be as follows:
  - Design Task: 15 marks
  - Oral: 10 marks
3. Evaluation of practical/oral examination to be done based on the performance of design task
4. Students work along with evaluation report to be preserved till the next examination

**1. CO Statements.**

PEL503.1: Student will develop expertise in modelling.

PEL503.2: Student can demonstrate Tool path simulation.

PEL503.3: Student can execute code for performing particular task in CNC.

PEL504.4: Student can perform analysis.

**2. CO-PO-PSO Mapping.**

CO# / PO#	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PEL504.1	2	0	0	-	-	-	-	-	-	-	-	0
PEL504.2	2	0	0	-	-	-	-	-	-	-	-	0
PEL504.3	2	2	2	-	3	-	-	-	-	-	-	2
PEL504.4	2	-	2	-	-	-	-	-	-	-	-	-

CO# / PSO#	PSO1	PSO2
PEL504.1	2	-
PEL504.2	2	-
PEL504.3	2	-
PEL504.4	2	-

3. Curriculum Gap/Content beyond syllabus (if any).

4. CO Assessment tools with target.

<b>FINAL CO</b>	=	<b>(0.8* Direct) + (0.2* Indirect)</b>
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<b>Direct</b>	<b>CO1</b>	(0.6*Practical) +(0.4*Univ Exam)
	<b>CO2</b>	(0.6* Practical) +(0.4*Univ Exam)
	<b>CO3</b>	(0.6* Practical) +(0.4*Univ Exam)
	<b>CO4</b>	(0.6* Practical) +(0.4*Univ Exam)

<b>Indirect</b>	<b>CO1</b>	(1*Exit Survey)
	<b>CO2</b>	(1*Exit Survey)
	<b>CO3</b>	(1*Exit Survey)
	<b>CO4</b>	(1*Exit Survey)

### LECTURE PLAN

<b>Week No.</b>	<b>Topics</b>	<b>Hours</b>
<b><u>Week 1</u></b> (15/7/18 – 21/07/18)	Programming for transformations,	2
<b><u>Week 2</u></b> (22/7/18 – 28/07/18)	API on Creating As built joints, Slider Joint Motion	2
<b><u>Week 3</u></b> (29/7/18 – 04/08/18)	Get the physical Properties API	2
<b><u>Week 4</u></b> (05/08/18 – 11/08/18)	Get the circle and arc data from the edge	2
<b><u>Week 5</u></b> (12/8/18 – 18/08/18)	Sketch spline through points creation : API	2
<b><u>Week 6</u></b> (19/08/19 – 25/08/19)	Solid modeling using any 3D modeling software	2
<b><u>Week 7</u></b> (26/8/19 – 01/09/19)	<b>Unit Test 1 (Aug 13,14,16)</b>	

<b><u>Week 8</u></b> (2/09/19 – 08/09/19)	Part programming and part fabrication on CNC trainer (Turning / Milling)	2
<b><u>Week 9</u></b> (09/09/19 – 15/09/19)	Geometrical optimization of any mechanical component using computer aided engineering concepts. (Shape optimization)	2
<b><u>Week 10</u></b> (16/9/19 – 22/09/19)	Development of physical 3D mechanical structure using any one of the rapid prototyping processes.	2