

GUJARAT TECHNOLOGICAL UNIVERSITY

AERONAUTICAL ENGINEERING (01)

SOLID AND SURFACE MODELLING

SUBJECT CODE: 2140108

B.E. 4th SEMESTER

Type of Course: Engineering

Prerequisite: Basic concept of Engineering Graphics, Computer Aided Design

Rationale: Solid modeling tool unites the 3D parametric features with 2D tools. Besides providing an insight into the design content, the subject gives an idea about use of modeling tools for real world problems.

Teaching and Examination Scheme:

| Teaching Scheme | | | Credits | Examination Marks | | | | | | Total Marks |
|-----------------|-----|-----|---------|-------------------|---|---------|-----------------|--------|----|-------------|
| L | T | P | | Theory Marks | | | Practical Marks | | | |
| | | | ESE (E) | PA (M) | | ESE (V) | | PA (I) | | |
| PA | ALA | ESE | | OEP | | | | | | |
| 0 | 0 | 2 | 2 | 0 | 0 | 0 | 50 | 30 | 20 | 100 |

Content:

| Sr. No. | Topics | Teaching Hrs. | Module Weightage |
|---------|---------------------|---------------|------------------|
| 1 | Introduction to CAD | 2 | 30 |
| 2 | Sketcher | 4 | |
| 3 | Part Design | 10 | 70 |
| 4 | Surface Design | 10 | |

Reference Books:

1. CATIA V5R21 for Engineers and Designers by Prof. Sham Tickoo, Gaganjeet Singh Sethi

Course Outcomes:

After successful completion of course students should be able to

To know about the fundamentals of CAD.

To understand the steps involved in modeling.

To understand the real world problem with the use of modeling tool.

To be able to create a 3D model this can be analyzed in analysis packages.

List of practicals:

1. An Introduction to CATIA V5R21
2. Drawing sketches in sketcher workbench I
3. Drawing sketches in sketcher workbench II
4. Part Design workbench I
5. Part Design workbench II
6. Part Design workbench III

7. Part Design workbench IV
8. Surface Design workbench I
9. Surface Design workbench II
10. Surface Design workbench III
11. Surface Design workbench IV

Open Ended Problems: Apart from above practicals a group of students has to undertake one open ended problem. Few examples of the same are given below.

1. Modelling of Fuselage.
2. Modelling of Turbine.
3. Modelling of Landing Gear.
4. Modelling of Car.

Major equipment:

Computational Power which can be useful to operate CATIA V5R21.

Configurations:

1. RAM : 4 GB DDR3
2. HDD: 120 GB
3. Processor: INTEL Core i3 4130
4. Processor Speed: 3.4 GHz
5. Monitor: 17" TFT Display

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.