

3D EXPERIENCE LAB

((Skill Oriented Course Elective – I/II))

Course Code: 22ME11S3

L T P C
1 0 2 2

Course Outcomes: At the end of the course, the student will be able to

CO1: generate part models and combine parts to create an assembly

CO2: develop models using generative shape design

CO3: illustrate simulation of mechanisms

CO4: use limits, fits and tolerances while drafting sectional views of assembled components

CO5: analyze mechanical components and describe process planning

LIST OF EXERCISES

Note: Any 12 exercises of the following are to be performed

1. Part modelling and assembly of Bench Vice.
2. Water bottle surface creation
3. Water jug surface creation
4. Badminton bat surface creation
5. Nut and bolt with threads
6. Surface generation of sheet metal and converting into a solid model
7. Design Assembly and Simulation of Four Bar Link Mechanism
8. Design, assembly and simulation of a slider-crank mechanism
9. Design, assembly and simulation of a Selective Compliance Assembly Robot Arm (SCARA).
10. Drafting of solid models with dimensions, cut sections and projections
11. Drafting of solid models with indications of limits, fits and tolerances
12. A basic introduction to SIMULIA and static analysis of cantilever beam
13. Heat transfer analysis on a plate
14. A basic introduction to DELMIA and demo on process planning, assembly evaluation and generating the Gantt chart of a radial engine assembly

SOFTWARE PACKAGE: 3DEXPERIENCE Platform - CATIA, DELMIA, SIMULIA **Text**

Books:

1. K. L. Narayana, P. Kannaiah and K. Venkata Reddy, *Machine Drawing*, 6th Edition, New Age Publishers, 2019.
2. K. L. Narayana, P. Kannaiah, K. Venkata Reddy, *Production Drawing*, 3rd Edition, New Age International Publishers, 2014. **Reference Books:**
 1. N. D. Bhatt, *Machine Drawing*, 47th Edition, Charotar, 2012.
 2. Sham Tickoo, *CATIA V5-6R2016 for Designers*, 14th Edition (Kindle Edition), CADCIM Technologies, 2017.