



Birla Institute of Technology & Science, Pilani
Hyderabad Campus

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
SECOND SEMESTER, 2019-2020
COURSE HANDOUT (PART-II)

Date: 02-01-2020

In addition to Part-I (General Handout for all courses appended to the time table), this portion gives further specific details regarding the course.

Course Code: ME G611

Name of the Course: Computer Aided Analysis and Design

Instructor-In-Charge: KURRA SURESH

Practical Instructor: Kurra Suresh

I. Scope and Objective of the Course

The course aims at developing complete self reliance in solving analysis and design problems of engineering with the aid of computers. It stresses upon the use of more powerful tools including system planning, simulation and modeling. The student will take up a design project and will work independently on the project guided by the instructor or resource person as and when required. The effort must culminate with a CAAD program and a project report.

II. Textbooks

1. Rogers D. F. and J. A. Adams, "Mathematical Elements of Computer Graphics", Tata McGraw-Hill, New York, 2004.

III. References

1. Rao V. Dukkipati, Ananda Rao M. and Bhat R., "Computer Aided Analysis and Design of Machine Elements", New Age International Publishers, 2000.
2. Mortenson M. E., "Geometric Modeling", McGraw-Hill Education (India) Pvt. Ltd, 2006.
3. Srinivasa Prakash Regalla., "Computer Aided Analysis and Design", IK International Publishing House Pvt.Ltd, New Delhi.
4. Chapra S. and Canale R., "Numerical Methods for Engineers", Tata McGraw-Hill, New Delhi.
5. Ibrahim Zeid., "Mastering CAD/CAM" Tata McGraw-Hill, New Delhi.
6. **Getting Started with [MATLAB](#) by [Rudra Pratap](#)**
7. **[Pro Engineer](#)-Wildfire 5.0 Instructor: [David Kelley](#)**





IV. Course Contents

| S. No. | Learning Objectives | Topic | Number of Lectures | Source |
|---|-------------------------------|---|--------------------|----------------|
| Fundamentals of Computer Aided Design and Geometric Modeling | | | | |
| 1. | CAD software and CAD hardware | Introduction, 3D modeling and viewing, modeling aids and tools, engineering drawings, CAD programming | 3 | RB 5: Ch-1-4 |
| 2. | Transformations | 2-D and 3-D Geometric Transformations | 5 | TB1: Ch-2 & 3 |
| 3. | Parametric curves | Geometric Modeling: Curves, theory and MATLAB modeling | 9 | TB1: Ch-4 & 5 |
| 4. | Parametric surfaces | Geometric Modeling: Surfaces and NURBS, theory and MATLAB modeling | 9 | TB1: Ch-6 |
| 5. | Parametric solids | Geometric Modeling: Solids and Features, theory | 2 | RB2 |
| Computer Aided Analysis and Design of Machine Elements | | | | |
| 1. | Design Principles | Stress, Strain, Theories of failure | 3 | RB1: Ch-1 to 3 |
| 2. | Numerical methods in design | Computer aided static, transient and dynamic analysis and design | 6 | RB1: Ch-4 to 6 |
| 3. | Design of Experiments | Factorial and Taguchi designs | 5 | Class notes |
| Total | | | 42 | |

V. Evaluation Scheme and Schedule

| Component | % Weightage | Date | Remarks |
|--------------------------------------|-------------|------------------|--------------------|
| Mid-Test | 25 | | 7/3 9.00 - 10.30AM |
| Projects/Research papers/ Practicals | 40 | As per Timetable | Open Book |
| Comprehensive Examination | 35 | | 14/05 FN |

VI. Chamber Consultation Hour: It will be announced in the class.

VII. Notices concerning the course: All notices concerning the course are displayed in CMS only.

Make-up Policy: Make up for any component of evaluation will be permitted only in genuinely serious cases only after production of necessary medical certificates and with prior permission.





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Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

Instructor-In-Charge
ME G611

