



SECOND SEMESTER, 2015-2016

COURSE HANDOUT (PART-II)

Date: 13/01/2016

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: Sandeep Dhar (sandeep.dhar@pilani.bits-pilani.ac.in)

Scope and Objective of the Course:

The course aim at exposing a higher degree student with advanced concepts in the field of computer-aided-design. One may expect to gain a basic understanding of how CAD has become a need of modern engineering design. Also, emphasis would be given on the mathematical concepts that form the backbone of CAD tools; this is to enable a student to appreciate the subtleties of using CAD as a design tool.

1. Textbooks

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

2. References

- a. Zeid I., "Mastering CAD/CAM", Tata McGraw-Hill, New Delhi, 2005.
- b. Rao V. Dukkupati, Ananda Rao M. and Bhat R., "Computer Aided Analysis and Design of Machine Elements", New Age International Publishers, 2000.
- c. D. C. Montgomery, "Design and Analysis of Experiments", Wiley India (WSE), 5th Edition, New Delhi
- d. Chapra S. and Canale R., "Numerical Methods for Engineers", Tata McGraw-Hill, New Delhi.

3. Course Contents

Topic	Number of Lectures	Source
Fundamentals of Computer Aided Design and Geometric Modeling		
1. Introduction to CAD and computer graphics a) General Introduction to CAD, its applications in Engineering Design	4 (1+1+1+1)	TB1: Ch-1





Topic	Number of Lectures	Source
b) Hardware for CAD, input/display/output devices c) Newer technologies d) Image storage formats and various platforms		
2. Geometric Modeling: Curves a) Curve representation b) Polynomial representations and curves c) B-Splines d) Bezier Curves	9 (1+2+3+3)	TB1: Ch-4 & 5
3. Geometric Modeling: Surfaces a) Parametric representation of surfaces b) Sweep Surfaces c) Curve of intersection b/w surfaces d) Boundary interpolation surfaces	8 (2+2+2+2)	TB1: Ch-6
4. 2-D and 3-D Geometric Transformations & Solid modeling a) Rigid body transformation b) Deformations c) Transformations in 3-D d) Projections	7 (2+2+2+1)	TB1: Ch-2 , 3 & RB 1
Computer Aided Analysis and Design of Machine Elements		
5. Computer aided static, transient and dynamic analysis and design a) Solid Modeling b) Computation for Geometric Design c) Meshing d) FEM	7 (1+2+2+2)	RB2: Ch-4 -6
6. Design of Experiments	5	RB3
Total	40	





6. Evaluation Scheme and Schedule

Component	Weightage (%)	Date	Remarks
Mid Semester Exam	25	18/3 4:00-5:30 PM	Closed Book
^{\$} Project or Research Papers	35	To be decided by Feb 10, 2016	<ul style="list-style-type: none">Choice of project would require writing elaborate code to use some or all the concepts discussed in the course.Choice of research paper would involve a comprehensive presentation about the paper along with reproducing some results.
Comprehensive Examination	40	13/5 AN	30% Open Book and 70 % CB

^{\$} *Only after discussions and approval from the instructor-in-charge. Group size would be decided depending on the class strength.*

7. Chamber Consultation Hour:

Chamber: 2243-P Timings: Th, 2-3pm

8. Notices concerning the course:

All notices concerning the course will be displayed on the department notice board and via email.

9. Make-up Policy:

- Only for Mid-Sem and End-Sem.
- Make up will be permitted only in cases with appropriate reasons and necessary proof related to the absence.

Academic Dishonesty: Any form of plagiarism or related forms of academic dishonesty will invite severe penalty on grades. For more details of academic dishonesty, please visit:

https://en.wikipedia.org/wiki/Academic_dishonesty

Instructor-In-Charge

ME G611

