



ENGINEERING DRAWING AND COMPUTER GRAPHICS

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IIT Kharagpur

TYPE OF COURSE : New | Core | UG

COURSE DURATION : 12 weeks (20 Jul' 20 - 9 Oct' 20)

EXAM DATE : 17 Oct 2020

PRE-REQUISITES : Interested Learners

INTENDED AUDIENCE : Aerospace, Computer Science, Civil, Chemical,, Electronics, Information Technology, Mechanical, Bio-Technology, Production

INDUSTRIES APPLICABLE TO : Various automotive, petro and process industries:TATA Steel, TATA motors, SHELL, ONGC, Reliance, HAL, SAIL, BHEL, BARC, Airbus, GE, almost all the the manufacturing and process industries

COURSE OUTLINE :

All phases of manufacturing a product involve expressing basic ideas into graphical format widely known as engineering drawing and design. The present course prepares the students to learn the basics concepts involved in technical drawing skills and computer graphics.

During this course, the student will develop skills on:

- understanding of engineering drawings used in industries - computer design and development of 3D objects
- exposure to visual aspects of technical drawings

ABOUT INSTRUCTOR :

Presently, Prof. Rajaram Lakkaraju is working as a faculty member at the department of mechanical engineering, IIT Kharagpur since 2015. He has taught courses like fluid mechanics, computational methods for thermal engineers, mathematical methods, and two-phase flows and Engineering Drawing. He had graduated with a Ph.D. degree from the University of Twente, The Netherlands, and MS (Engg.) from JNCASR, India.

COURSE PLAN :

Week 1: Introduction to engineering drawings Introduction, drawing instruments, lettering, layouts, geometrical curves, dimensioning and tolerances

Week 2: Conic sections Introduction, circle, ellipse, parabola, hyperbola and cycloids

Week 3: Orthographic projections-I Orthographic projections, conventions used, points and lines

Week 4: Orthographic projections-II Traces of lines, inclined planes, auxillary planes, projection of solids

Week 5: Sections and sectional views Prism, cylinder, pyramid, cone, sectional orthographic views, development of surfaces

Week 6: Isometric projections Principles of isometric projection, isometric views: lines, planes, solids

Week 7: Overview of computer graphics-I Introduction to computer graphics, CAD software: AutoCAD and Solidworks

Week 8: Overview of computer graphics-II Software related drawing of lines and planes

Week 9: Overview of computer graphics-III solids and development of surfaces, simple and compound solids

Week 10: Overview of computer graphics-IV Description of some graphic devices, active and passive graphic devices, display technologies, Raster scan displays, cathode ray tube displays, LCD displays, video controllers, Mathematical details of 2D and 3D transformation principles of computer graphics, perspective geometry, parametric, non-parametric representations, general conic equations, Bezier and B-spline curves

Week 11: Design project-I

Week 12: Design project-II