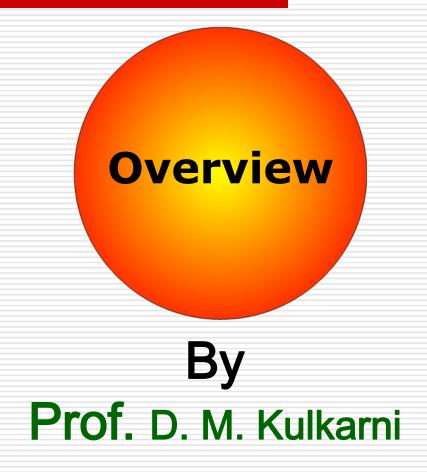
Engineering Graphics with AutoCAD



Engineering Graphics with AutoCAD





Engineering Graphics with AutoCAD D.M. Kulkarni • A.P. Rastogi • A.K. Sarkar

Designed as a text for the undergraduate students of all branches of engineering, this compandium gives an op apply the popular drafting software AutoCAD in designing projects.

The textbook is organized in three comprehensive parts. Part I (AutoCAD) deals with the basic commands of AutoCAD which is widely used as draft fragonitwise by engineen and architects. Part II (Projection Techniques) contains writious projection techniques used in engineering for technical drawings. These techniques have been explained with a sumbar of the diagrams tormate them simples to the students. Part III (Dearchptive Geometry), mainly deals with 3-0 objects that require imagination. Unlike convertional textbods, for students. Part III (Dearchptive Geometry), mainly deals with 3-0 objects that require imagination. Unlike convertional textbods, for the students. Part III (Dearchptive Geometry), mainly deals with 3-0 objects that require imagination. Unlike convertional textbods, for the students. Part III (Dearchptive Geometry), mainly deals with 3-0 objects that require imagination. Unlike convertional textbods, for the students. Part III (Dearchptive Geometry), mainly deals with 3-0 objects that require imagination. Unlike convertional textbods, for the students. Part III (Dearchptive Geometry), mainly deals with 3-0 objects that require imagination. Unlike convertional textbods, for the students. tional drafting techniques.

Key Features

Explains fundamentals of imagination skill in generic and basic forms to crystallize key concepts in Engl

 Includes chapters on aspects of technical drawing and AutoCAD as a tool.
Treats problems in the third angle as well as first angle methods of projection in line with the revised code of Indian Standard Code of Practice for General Drawing

About the Authors

of Technology and Science (BITS) Plani, Goa Campus, Goa, Earlier he was with MICO Bosch and Cromoton Greaves Limited. cr. He has more than a derience. His research are as include Fracture Mechanics, Finite nouter Aided Design

s former Lecturer, Department of Civil Engineering, Birla Institute of Technology and Science (BITS), I e decades of experience in teaching courses like Engineering Graphics and Graphic Arts.

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Kulkarni • Rastogi • Sarkar

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D.M. Kulkarni • A.P. Rastogi • A.K. Sarkar



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What is Engineering Graphics

Engineering Graphics is the language of Engineers. Like any other language, one should be able to READ | WRITE | SPEAK. The knowledge of Engineering Graphics is useful to both scientist as well as Engineers.



Engineering Graphics

Engineers use graphics to communicate technical information without ambiguity to executives, fabricators, customers, and each other.

Engineering graphics has a well-defined set of standards by which technical drawings are produced.

This course teaches the language of engineering graphics from basic sketching through 3-D solid modeling using computer aided design (CAD) software AutoCAD.

The course also gives the opportunity to apply this new knowledge to creative engineering design projects.

Applications of Computer Aided Drafting

Mechanical	:	Design of machine elements, CNC machine					
		tools, Robotics.					
Automotive	:	Kinematics, Hydraulics, Steering.					
Electrical	:	Circuit layout, Panel design, control system.					
Electronics	:	Schematic diagrams of PCs, Ics, etc.					
Communication: Communication network, satellite							
		transmitting pictures, T.V Telecasting					
Civil	:	Mapping, contour plotting, building drawing,					
		structural design.					
Architectura		Town planning, interior decorations, multi					
		storied complex.					
Aerospace	:	Design of spacecraft, flight simulator, lofting					



Why with AutoCAD?

Current industrial practice (traditional drafting is obsolete).
Helps students to explore other solid modelling softwares in their own disciplines

Helps Mechanical students to generate 2-D Machine drawings as well as 3-D models using Pro-Engineers

Helps Institute in many ways:

Online Assignments, online Exams and online evaluation solves n number of problems.

Storing the digital drawings (if required)

What about the hand-skills of students?



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Students are asked to	practice on				
the printed (ortho/iso) grid papers					
the printed (ortho/iso)	griu pupers				

Also, students are asked to draw free-hand sketches on paper.





- 1. To learn the AutoCAD tool
- 2. To learn the theory of projections
- 3. To learn the descriptive geometry
- 4. To learn a 3-D imaginational skill
- To learn a hand-sketch skills for 2-D drawing and 3-D modelling



Course Coverage

ENGINEERINGGRAPHICSJJAutoCADTheory of
ProjectionsDescriptive
GeometryFreehand
Sketching



Proficiencies

Institutional proficiencies assigned to this course

Successful completion of this course will enhance the student's ability to:

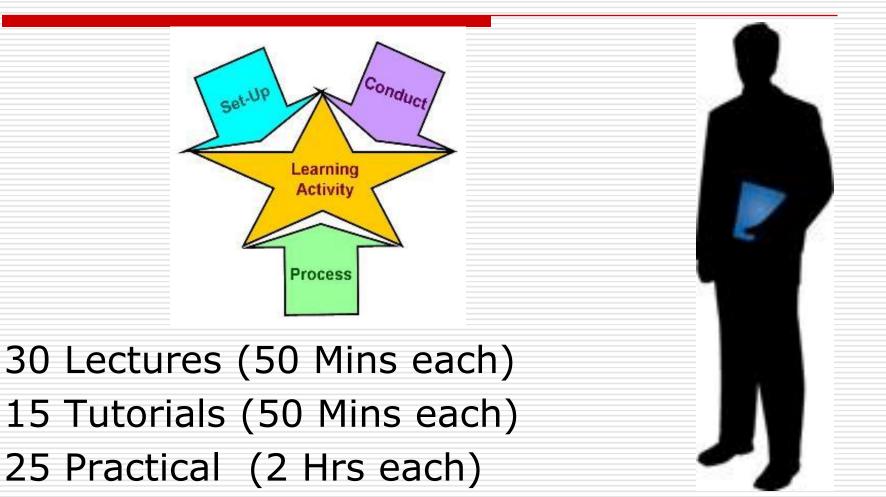
- Interpret and synthesize information and ideas
- Analyze and evaluate
- Use computer technologies for communication

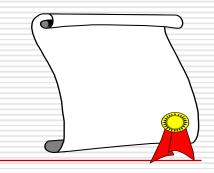
Department-specific proficiencies assigned to this course

By completing this course, students will understand:

- Visualization as it pertains to engineering design
- Engineering drawing techniques
- Orthographic and pictorial projections
- Auxiliary and section views
- Basic dimensioning
- 2-D CAD drawing techniques
- 3-D CAD modeling techniques

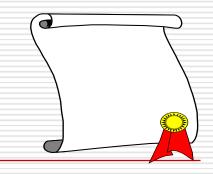
Course Conduct





Course Handout

Lect.	LearningObjectives	Topics to be covered	Pract.	Chap./Sec.
No.			Classes	
1 to 4	Intro. To AutoCAD	Basic commands	4	Ch.1, Ch.2&Ch 4
5 to 9	Orthographic projections	Theory, techniques, first and third angle projections, Multi view drawing from pictorial views.	3	3 & Ch. 5
10 to 12	Pictorial drawings	Theory of isometric and oblique drawing, construction of isometric and oblique from orthographic.	3	Ch. 6
13 to 14	Missing line(s) & view	Identification and drawing of missing line(s) and view in orthographic projections	2	Ch. 7



Course Handout

Lect. No.	LearningObjectives	Topics to be covered	Pract.	Chap./Sec.
			Classes	
15 to 16	Auxiliary projections	Need, primary and secondary auxiliary views, true shapes.	1	Ch. 8
16 to 20	Spatial geometry	Projection of points; lines, true lengths, inclinations, shortest distance; planes	3	Ch. 9, Ch.10& Ch11
21 to 24	Geometrical solids and sections	Construction of right, regular, oblique solids; section planes and sectional view.	4	12 & Ch. 13
25 to 26	Development of surfaces	Radial line, parallel line; reverse development	2	14
27 to 30	Intersection of surfaces	Intersections between: line- plane, plane-plane, line-solid, solid-solid	3	15

Online Teaching through AutoCAD



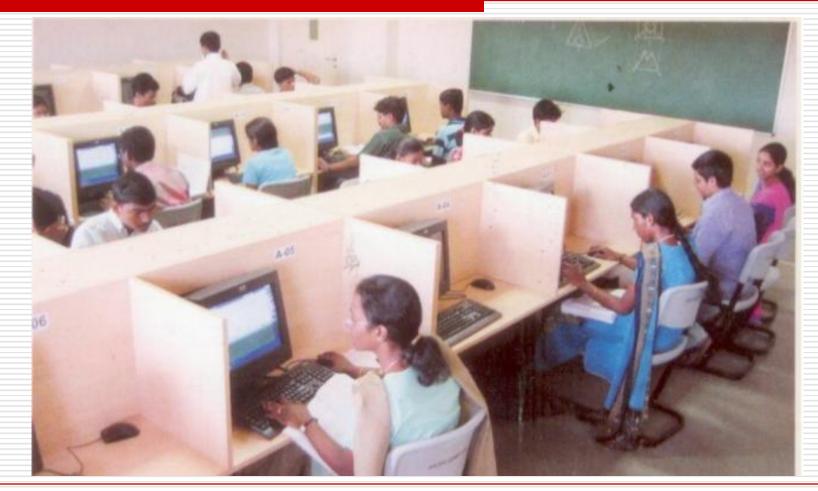
2 Lectures per Week

Tutorial Class Conduct on Grid Sheet



1 Tutorial Hour per Week (Hand skills)

Online Assignment



2 Practicals, each of 2 hours (4 Hours per Week)

Online Examination & Evaluation



Evaluation Components & Evaluation

1)Assignments 120 Marks

- 2)Mid-Test 60 Marks
- 3)Compre. Exam. 120 Marks

Total 300 Marks



Assignments Evaluation

Total 25 Assignments

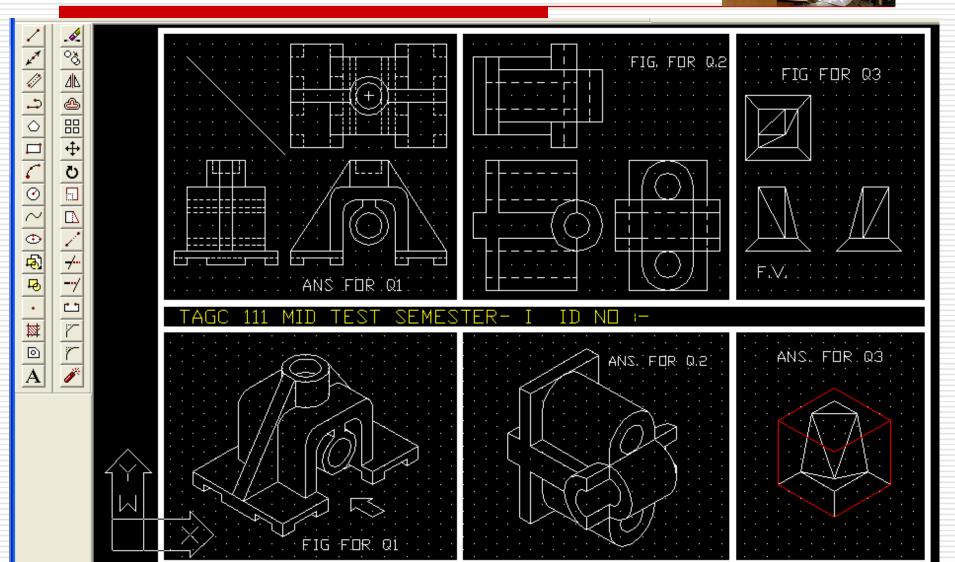
First 5 Assignments on AutoCAD Commands

Total 20 Assignments on course

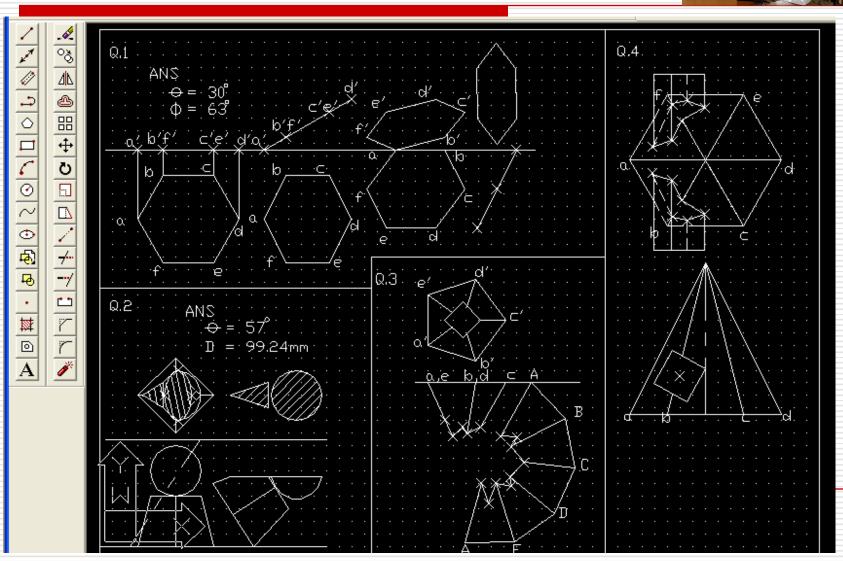
20 Assignments X 20 Marks Each = 400 Marks

400 Marks X 0.3 = **120 Marks**

Mid-Test (60 M) Model Q & A Sheet



Compre Examination (120M) Model Q & A Sheet



Thanks