

# TA 101 ENGINEERING GRAPHICS



C. V. R. Murty

2007~08 Semester II

January – May 2008

# COURSE OBJECTIVE

- To learn basics of Engineering Drawing

- Advanced topics of Engineering Drawing in other courses

- Civil Engineers
    - Mechanical Engineers
    - Mathematics
    - Physics
    - ...

# COURSE CONTENTS

- Introduction to the Course
- Basics of Engineering Drawing
  - Need
  - Tools
    - Drawing Paper
    - Pencils
    - Drafter
    - Set squares
    - French Curves
  - Lettering and Drawing
  - Geometric Constructions

# COURSE CONTENTS

- Orthographic Projections

- Introduction

- Projections of Objects

- Isometric projections & drawing
    - Perspective projections

- Principles of Dimensioning

- Sectional views

- Machine Part Assemblies

# COURSE CONTENTS

- **Space Geometry**

- Development of lateral surfaces of simple solids
- Lines and Planes
  - Auxiliary views
- True lengths and shapes
- Intersection of Lines and planes
- Intersections of solids

- **Computer-based Graphics**

- Laboratory class only

# CONTACT HOURS

- Each week

	Hours
Lecture	2
Discussion Hour	1
Drawing Class	3

- Units

4

# TIME TABLE

- Weekly business
  - Finish each weeks activities within that week

Day	0800	0900	1000	1100	1200	1300	1400	1500	1600
Monday	D		C3 and C4						
Tuesday			C5 and C6						
Wednesday			C7 and C8					L	
Thursday			C9 and C10						
Friday			C1 and C2					L	

Contact	Venue
Lecture	Lecture Hall Complex L7
Discussion	Tutorial Block TB109-207
Drawing Class	Drawing Hall Complex

# TUTORS & INSTRUCTOR

Sec.	Name	Dep.	Disc. Room	Email	Phone
C1	Bhaskar Dasgupta	ME	TB 109	dasgupta	7095
C2	Anupam Saxena	ME	TB 110	anupams	7988
C3	J. Ramkumar	ME	TB 207	jrkmur	7546
C4	P. K. Mohapatra	CE	TB 205	pranab	7044
C5	Nihar R. Patra	CE	TB 206	nrpatra	7623
C6	Purnendu Bose	CE	TB 204	pbose	7403
C7	D. P. Mishra	AE	TB 202	mishra	7125
C8	Priyanka Ghosh	CE	TB 203	priyog	7022
C9	E. Rathkrishnan	AE	TB 201	erath	7847
C10	Sumit Basu	ME	TB 111	sbasu	7506

Ins.	C. V. R. Murty	CE		cvrn	7267
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# EVALUATION

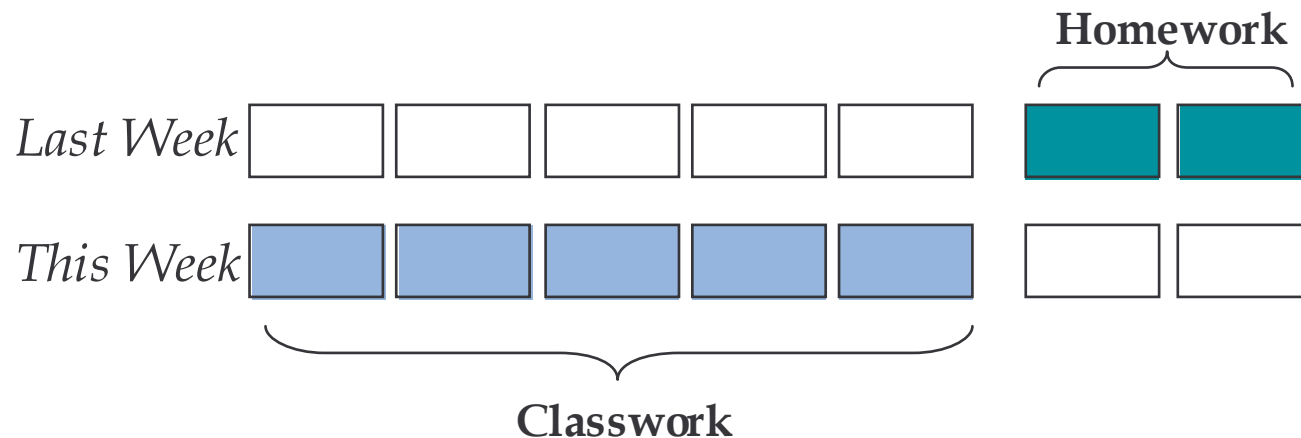
## Marks

- **Class Work** 20 (Best 10 Sheets)
- **Examinations**
  - First Mid~Semester 20
  - Second Mid~Semester 20
  - End Semester 40
- **Home Work** No marks\*
  - Each homework exercise precedes corresponding drawing class work exercise with similar exercises
  - Students who do the homework sheets are known to do better in next week's drawing class and in examination performances.

# EVALUATION

## Marks

- Discussion hour
    - Last Weeks Homework Sheet Questions
    - This Weeks Classwork Sheet Questions
- ☐ These will be related



## • References

- French, T.E., Vierck, C.J., and Foster, R.J., **Graphics Science and Design**, McGraw Hill Book Company, New York, Fourth Edition, 1984
- Bhatt, N.D., **Elementary Engineering Drawing**, Charoter Publishing, Anand, Thirty First Edition, 1990
- French, T.E., Vierck, C.J., and Foster, R.J., **Engineering Drawing and Graphic Technology**, McGraw Hill International, Singapore, Thirteenth Edition, 1987
- Luzadder, W.J., and Duff, J.M., **Fundamentals of Engineering Drawing**, Prentice Hall India, New Delhi, Eleventh Edition, 1983
- Bethune, J.D., **Engineering Graphics with AutoCAD**, Prentice Hall, Englewood Cliffs, First Edition, 1995
- Sidheswar, P., Kannaiah, P., and Sastry, V.V.S., **Machine Drawing**, Tata McGraw Hill Publishing Company Ltd., 1996

# DRAWING KIT

- Drawing Kit (Good quality)

- Drawing board
- Black Base Sheet
- White A2 drawing sheet
- Orthographic and Isometric Grid Paper
- Drawing board clips or Cello-tape
- Pencils (Clutch pencil !!) and Leads (2H, H, HB)
- Sharpener
- Soft sand paper
- Eraser
- Soft clean cloth

## DRAWING KIT

- Drawing Kit (Good quality)...
  - Mini-Drafter
    - A pair of Set-Squares  $45^\circ$ - $45^\circ$ ,  $30^\circ$ - $60^\circ$ 
      - 250 mm, 2.5 mm thick
  - Engineering Geometry Box
    - Compasses and dividers
    - Protractor
    - A steel or hard plastic scale (300 mm) with millimeter markings
  - French curves
    - Separate devices, or as part of set-squares

## DRAWING KIT

- Drawing Kit (Good quality)...
  - Common Sense !!

# INSTRUCTIONS

- Administrative

- A2-size sheets will be provided for Drawing Class Work & Home Work exercises

- At the Drawing Hall Complex

- Develop a habit of using pencils even for taking notes during the Lectures (in other courses too)

- Will help improve the quality of your drawing

# INSTRUCTIONS

- Administrative...

- Engineering drawing being discussed this semester requires only geometric constructions

- Does not require any calculations (trigonometric or otherwise) using calculators

- ☐ Perform necessary arithmetic without calculators.

- Do not submit Home Work exercise sheets

- Bring them to the Tutorial Hour

- ☐ Show your Tutor



# INSTRUCTIONS

- Administrative...
  - Ringing of CELL PHONES during lectures ??!!
    - YOU leave the class, if YOUR phone rings/beeps in class

# INSTRUCTIONS

- Technical

- Engineering Graphics

- Practice-oriented course

- Each exercise requires planning and thinking

# INSTRUCTIONS

- Technical...

- Before attempting any exercise in this course:

- Sketch free-hand solutions to the questions before coming to the drawing class

- ☐ Use graph sheet/sketch book
      - ☐ Share these free-hand sketches with the Tutor

- Prepare the drawing sheet

- ☐ Make the Border
    - ☐ Prepare the Title Block
    - ☐ Do lettering to complete the text in the Title Block

# INSTRUCTIONS

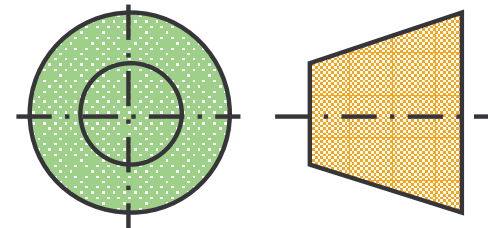
- Technical...

- Carefully plan the layout of the drawings on the sheet

- ☐ Place & arrange various drawings and their parts for pleasing view

- Follow THIRD ANGLE PROJECTION scheme unless specifically stated otherwise

- ☐ Place this symbol in the Title Block



# INSTRUCTIONS

- Technical...

- Choose appropriate scales for drawings in an exercise

- ☐ Can be different for different questions
    - ☐ Scale of any exercise should be such that all details of the object are clearly visible in the views
      - ✓ Scale used should be clearly written (e.g., scale 1:5).

- If all questions of an assignment cannot be accommodated on a single side of the given A1 drawing sheet

- ☐ Use the reverse side.

# INSTRUCTIONS

- Technical...

- Use good quality pencils

- ☐ Wood pencils

- ✓ Sharpening required

- ✓ Lines not uniform

- ☐ Clutch pencils (or mechanical pencils)

- ✓ No sharpening required

- ✓ Lines uniform

# INSTRUCTIONS

- Technical...

- Use good quality pencil leads

- ☐ Grade 2H pencil :: Construction lines & projectors  
Hatching  
Dimension lines
    - ☐ Grade H pencil :: Objects lines  
Lettering
    - ☐ Grade HB pencil :: Lettering  
Sketching
  - ☐ Grade 2B pencil :: Free hand sketching (artistes!!)

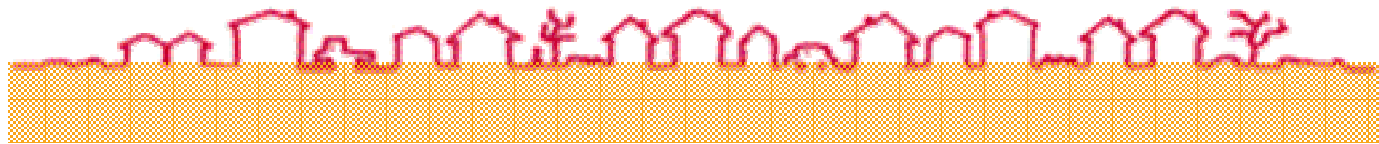
- Intensity of lines

- ☐ Depends on the PRESSURE applied by the pencil

# INSTRUCTIONS

- Technical...
  - Don't borrow and/or exchange drawing instruments and materials during drawing classes
    - ☐ Disturbs the rhythm of drawing of yours/your fellow classmates'
    - ☐ Strictly not allowed in exams
      - ✓ Get used to it in regular drawing classes





Have a Great Day!!

