



Lecture 01

ME-104 Introduction to CAD and CAM 3T (3, 0)

By

Engr. Muhammad Arsalan Khan



About Me

Engr. Muhammad Arsalan Khan

- **MED UET Peshawar**
(Office at Fluid Mechanics Lab, MED)
- **MSc –Mechanical Engineering (Materiel Engg.)**
(University of Engineering & Technology Peshawar , Pakistan-2018)
- **BSc -Mechanical Engineering**
(University of Engineering & Technology Peshawar , Pakistan -2013)

Email Address

engrarsalan@uetpeshawar.edu.pk



Goals for Today

3

1. To find about the structure & policies of this course
2. To develop basic concept about the Drawing and graphics



Communications

4

Check your e-mail often for announcements related to the course



3/24/2020



Reading Assignments

5

- Please make sure to read the assigned material for each week **before** the commencement of the corresponding week
- Reading that material beforehand will help you greatly in **absorbing** with ease the matter discussed during the lecture





Marks Distribution

6

- Assignments 15%
- Quizzes 10%
- Class Participation
- Mid Term Paper 25 %
- Final Term 50 %





- ❑ Late homework policy: Late submission of assignments will result in “zero” marks
- ❑ Assignments are to be submitted to CR before last date and he will submit them to me on Last date.
- ❑ Done on an individual basis
- ❑ Collaboration is fine, but it should be you alone who writes up the answers.





Quizzes

Quiz may be announced or may be surprise.





Mid term Exam

9

- After 8th week
- Duration: Two hours
- Will cover all material covered during the first 8 weeks



3/24/2020



Final Exam

10

- After 16th week
- Will cover the whole course before and after midterm
- Duration: -



3/24/2020



Recommended Books

- Elementary Engineering Drawing, Revised and Enlarged Edition by N. D. Bhatt.
- First Year Engineering Drawing by A.C Parkinson.
- Introduction to AutoCAD 2009 2D and 3D Design First edition Alf Yarwood
- Illustrated AutoCAD by T. W. Berghauser and P. L. Scrive
- Other latest books/online resources covering the course content.



Course Outline:

□ **Manual Drawing:**

Engineering drawing fundamentals, types of lines and usage, dimensioning, lettering, sheet planning, orthogonal projections, 1st angle projection, 3rd angle project, isometric view, auxiliary views, sectional view.

□ **AutoCAD :**

CAD/CAM tools, vector and raster data, using AutoCAD as 2D drafting tool, coordinate systems, drawing scale and viewing magnification, drawing primitives e.g. LINE, ARC, CIRCLE, TEXT, geometric transformations e.g. MOVE, COPY, SCALE, ARRAY, editing e.g. ERASE, TRIM, EXTEND, FILLET, CHAMFER, STRETCH, using snap and object snap facilities, creating and using symbols, layers, hatching, multiple line types and colors, dimensioning, paper view, sectional drawing and assembly drawing, printing and plotting drawings.

Introduction



1. INTRODUCTION TO ENGINEERING DRAWING:

A language of Engineers to describe

- a. Shape
- b. Size
- c. Fit
- d. Finish
- e. Production Process and Specification
- f. Function
- g. Assembly



Types of Drawings

Detail Drawings

To describe the shape, size, fit and finish of each and every part in detail for production purposes.

Sub-Assembly Drawings

To describe the fit and method of fastening for a small group of components to create an assembly.

Assembly Drawings

To describe the fit and method of fastening for a group of sub-assemblies to create a larger assembly.



Types of Measuring Systems

- English

Feet and Inches

- Metric

Meters and Millimeters



Drawing Instruments And Their Uses

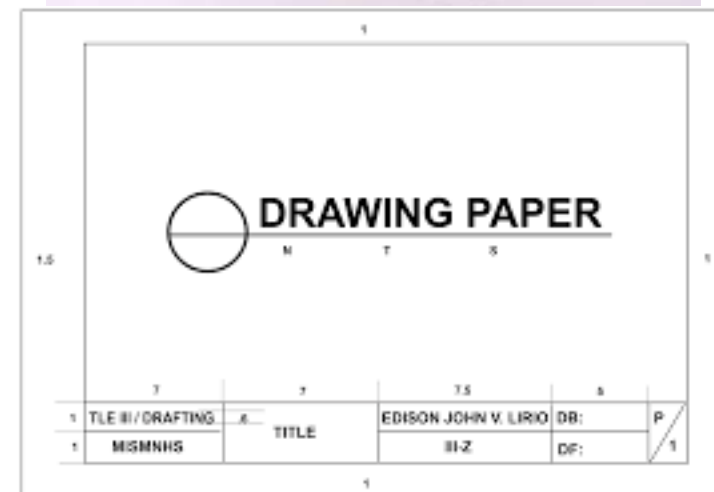
a. Drawing Board

Serves as a flat drawing surface to attach a paper to.



b. Drafting Media

- Paper
- Film (Tracing Paper)





Sizes of Papers:

Standard Sizes are:

USA size, inches

A (8.5 x 11.0)

B (11.0 x 17.0)

C (17.0 x 22.0)

D (22.0 x 34.0)

E (34.0 x 44.0)

International size, mm

A4 (210 x 297)

A3 (297 x 420)

A2 (420 x 594)

A1 (594 x 841)

A0 (841 x 1189)

DRAWING INSTRUMENTS AND THEIR USES



c. Pencils

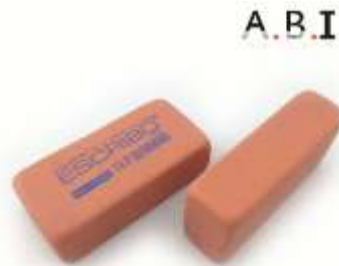
Classification according to lead hardness is:

Hard grades		Medium grades		Soft grades	
9H	Hardest	3H	Hardest	2B	Hardest
8H		2H		3B	
7H		H		4B	
6H		F		5B	
5H		HB		6B	
4H	Softest	B	Softest	7B	Softest



Drawing Instruments and their uses

- d. Eraser
Soft type



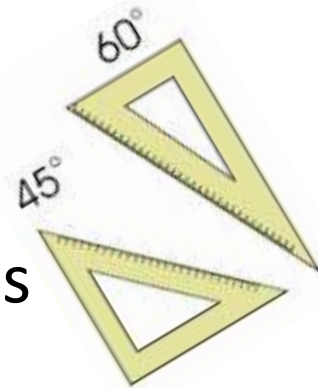
- e. T Square

For drawing horizontal lines and provide a supporting/sliding edge for set-squares and other stencils.



- f. Set-Squares

For drawing vertical and angular lines





Drawing instruments and their uses

- g. Scales
 - i. Linear scales (English and Metric)
 - ii. Cardboard scales (For reducing and increasing size)
 - iii. Diagonal scales (For measuring fractions)
 - iv. Protractor (For measurement of angles)



Drawing Instruments and their uses

- h. Compass with Extender
For drawing circles and circular arcs



- i. Divider
For transferring measurements and for dividing lines into a number of equal parts





Types of Lines used in Engineering Drawing:

a) Visible Outline

For showing visible edges of an object

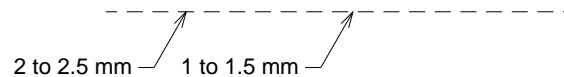
0.35 mm to 0.5 mm thick



b) Hidden Outline

For showing hidden edges of an object

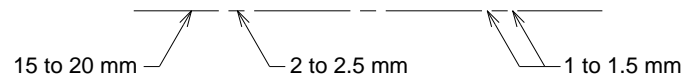
0.25 mm to 0.35 mm thick



c) Center Line

For locating center of circles, arc and ellipses relative to the object.

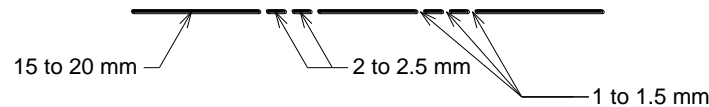
0.13 mm to 0.2 mm thick



d) Cutting Plane Line

To show the location of the imaginary section plane in the reference view.

0.5 mm to 0.7 mm thick

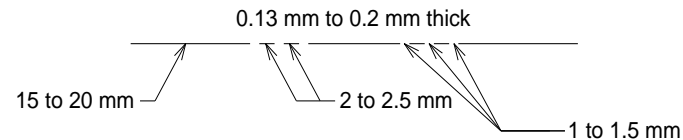




Types of Lines used in Engineering Drawing:

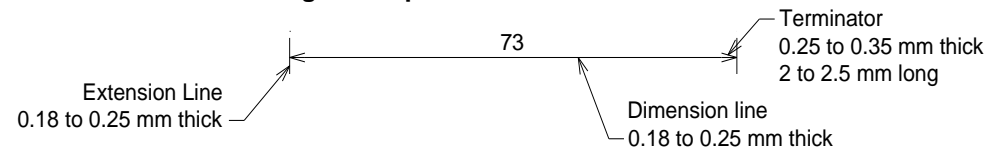
e) Phantom Line

For showing alternate position and/or adjacent part.



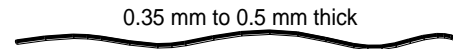
f) Extension Lines, Dimension Lines and Terminators

For extension of edges and placement of dimensions.



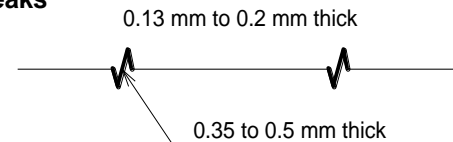
g) Short Break Line

For showing short breaks



h) Long Break Line

To show long breaks

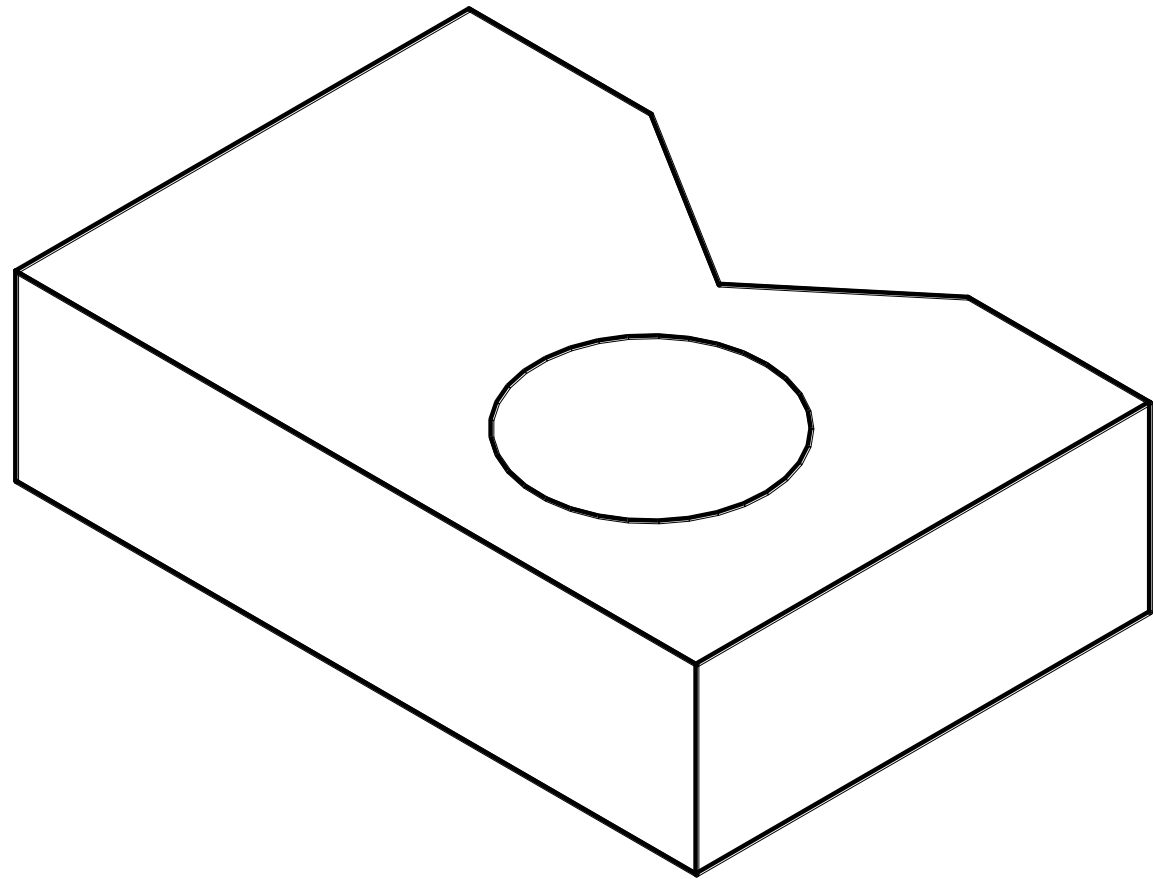


i) Section Lines

A pattern of thin lines 0.2 to 0.25 mm thick. The pattern and thickness is dependent on the material.

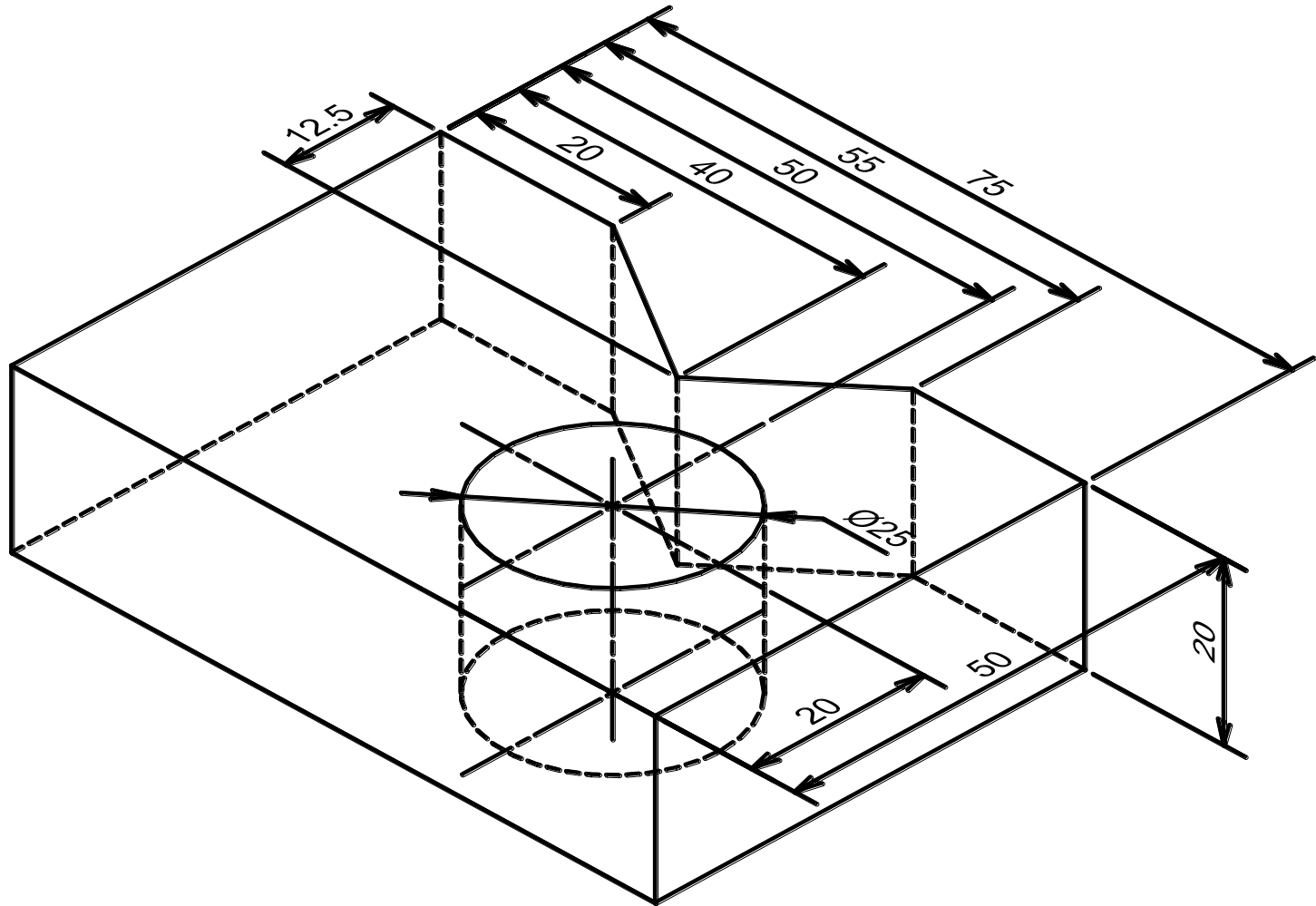


Types of Lines used in Engineering Drawing:



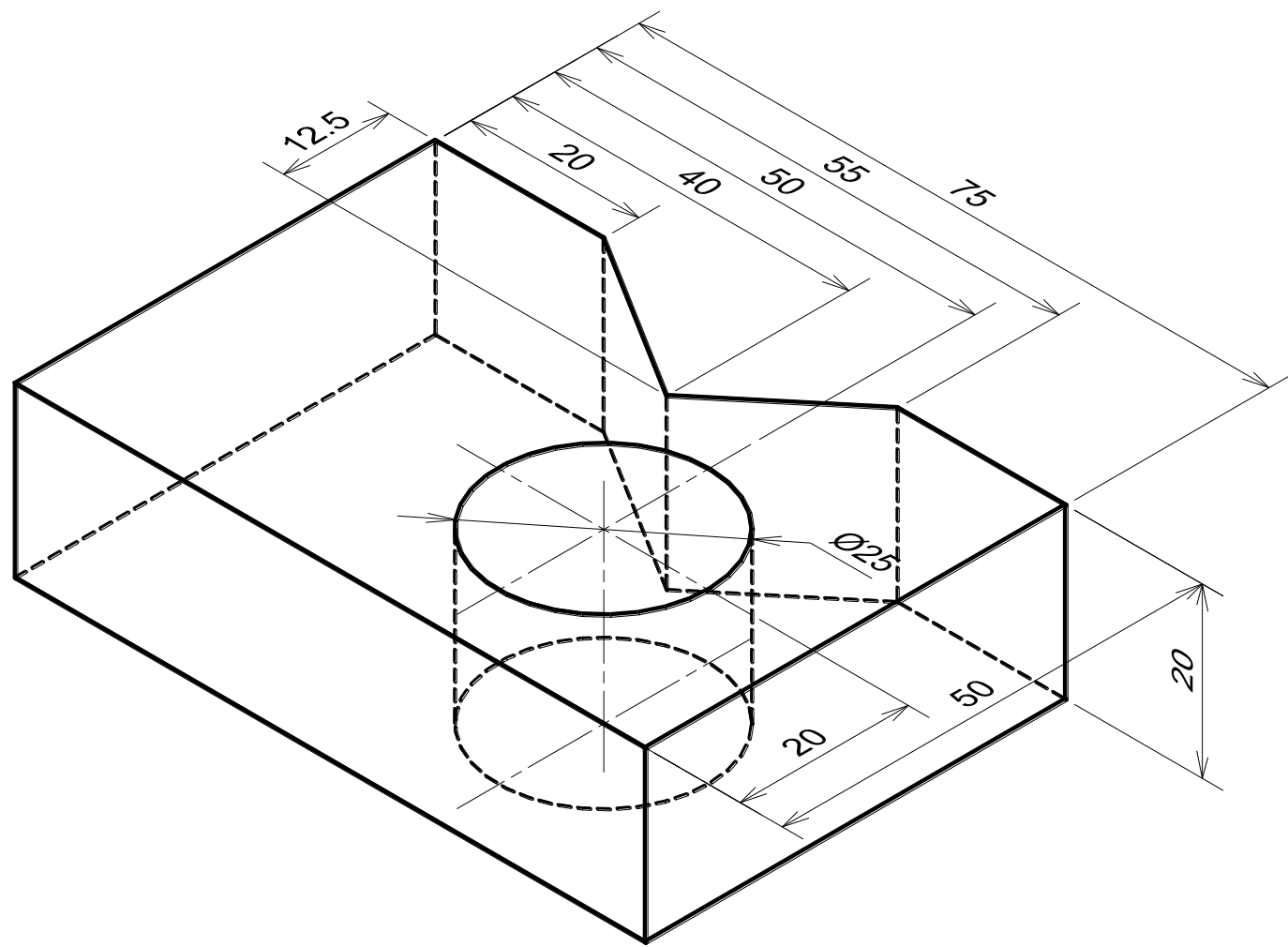


Types of Lines used in Engineering Drawing:





Types of Lines used in Engineering Drawing:





Please have a look

Video 1: <https://www.youtube.com/watch?v=z4xZmBpXIzQ>

Video 2: <https://www.youtube.com/watch?v=JVw51I17dCE>



Task to do till next class.

Chapter 1 (Read topics covered in lecture)



Questions

