

Engineering drawing

Course Level: Grade 12

COURSE DESCRIPTION: One of the best ways to communicate one's ideas is through some form of picture or drawing. This is especially true for the engineer. The purpose of this guide is to give you the basics of engineering sketching and drawing

We will treat "sketching" and "drawing" as one. "Sketching" generally means freehand drawing.

"Drawing" usually means using drawing instruments, from compasses to computers to bring precision to the drawings. Don't worry about understanding every detail right now - just get a general feel for the language of graphics.

COURSE OBJECTIVES: In this course, you will know and be able to:

DRAW:

- 1- Dimensioning and Scale,
- 2- Drawing Tools,
- 3- Geometric constructions,
- 4- Engineering Drawings,
- 5- The Three views (Orthographic or Multi-viewers Drawings),
- 6- Isometric Drawings,
- 7- And, finally draw any Engineering drawing using computer programs (AUTOCAD).

Explanation of Topics

Chapter 1: Dimensioning and Scale

Lesson:

- The purpose of dimensioning is to provide a clear and complete description of an object. A complete set of dimensions will permit only one interpretation needed to construct the part. Dimensioning should follow these guidelines.
- The drawings should have all important dimensions shown on the drawings (Dimensions are correct).
- The drawing has an excellent appearance.
- Space is used to display the final drawing in a professional manner.
- Drawing is drawn to scale.
- The title block is fully edited.

Chapter 2: Drawing Tools

Lesson:

- Boards.
- Charts (50*70 cm)
- T-Ruler (60 cm)
- Compass.
- Aristole triangle.
- Triangles (30 & 45 & 60 degrees)

Chapter 3: Geometric constructions

Lesson:

- Draw arcs, circles and lines.
- Draw open belt.
- Draw cross belt.
- Draw tangency curves.
- Draw an arc tangent to a given line and a circle.
- construct an ellipse.

Chapter 4: Engineering Drawings

Lesson:

- Draw any Engineering drawing shape.
- Draw any Mechanical drawing shape.
- Draw any Architecture drawing shape.

Chapter 5: The Three views (Orthographic or Multiviews Drawings)

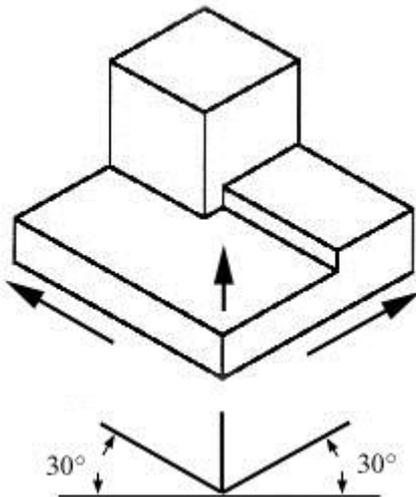
Lesson

- Draw the object on each of three faces as seen from that direction. Unfold the box and you have the three views. We call this an "orthographic" or "multiview" drawing.
- Draw view enlargements.
- Explain the difference between first and third angle projection.

Chapter 6: Title Isometric Drawing

Lesson

Any engineering drawing should show everything: a complete understanding of the object should be possible from the drawing. If the isometric drawing can show all details and all dimensions on one drawing, it is ideal. One can pack a great deal of information into an isometric drawing. However, if the object in the figure had a hole on the back side, it would not be visible using a single isometric drawing. In order to get a more complete view of the object, an orthographic projection may be used.



Chapter 7: Engineering drawing using computer programs (AUTOCAD).

Lesson

- The student should be able to draw all Engineering drawings using computer programs, In order to save time and effort and also to include technology in our studies.

COURSE EVALUATION

Quarter Grades:

- 40% : Final Exam
- 15% : weekly quizzes
- 15% : Assignments
- 15% : Projects
- 15% : Attendance or Classwork