

Course code: Course Title	Course Structure			Pre-Requisite
ME106: Engineering Graphics	L	T	P	NIL
	1	0	2	

**Course Objective:** The objective of the course is to familiarize the students with drafting and engineering drawing practices.

S. No	Course Outcomes (CO)
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<b>CO1</b>	Describe the principles of engineering graphics, rules of dimensioning, lettering, scales, types of projections, different planes used in projections.
<b>CO2</b>	Visualize projections of point's lies in different quadrants. Also, they will understand and obtain traces, true lengths shortest length and true angles with horizontal, vertical and auxiliary planes.
<b>CO3</b>	Visualize projections of plane surfaces of different shapes and traces of plane surfaces.
<b>CO4</b>	Define different types of solids and projections and sections of solids which axis parallel, perpendicular and inclined to horizontal planes.
<b>CO5</b>	Experiment application of development of surfaces, draw development of different types of surfaces, and isometric projections of solids with different shapes.

<b>S. No</b>	<b>Contents</b>
<b>UNIT 1</b>	General: Importance, Significance and scope of engineering drawing Lettering, Dimensioning, Scales, Sense of Proportioning, Different types of Projections, B.I.S. Specification, line symbols, rules of printing.
<b>UNIT 2</b>	Projections of Points and Lines: Introduction of planes of projection, Reference and auxiliary planes, projections of points and lines in different quadrants, traces, inclinations, and true lengths of the lines, projections on auxiliary planes, shortest distance, intersecting and non-intersecting lines.
<b>UNIT 3</b>	Planes Other than the Reference Planes: Introduction of other planes (perpendicular and oblique), their traces, inclinations etc., projections of points lines in the planes, conversion of oblique plane into auxiliary plane and solution of related problems.
<b>UNIT 4</b>	Projections of Plane Figures: Different cases of plane figure (of different shapes) making different angles with one or both reference planes and lines lying in the plane figures making different given angles (with one or both reference planes). Obtaining true shape of the plane figure by projection.

<b>UNIT 5</b>	Projection of Solids: Simple cases when solid is placed in different positions, Axis, faces and lines lying in the faces of the solid making given angles.
<b>UNIT 6</b>	Isometric and Orthographic Views: First and Third angle of system of projection, sketching of Orthographic views from pictorial views and vice –versa, Sectional views.
<b>UNIT 7</b>	Principles of dimensioning.
<b>UNIT 8</b>	Development of lateral surfaces of simple solids.
<b>UNIT 9</b>	Introduction to available drafting softwares like AutoCAD.

## REFERENCES

<b>S.No.</b>	<b>Name of Books/Authors/Publishers</b>	<b>Year of Publication / Reprint</b>
<b>1</b>	Engineering Graphics; K. L. Narayana, P. Kannaiah, Tata McGraw Hill.	1988
<b>2</b>	Engineering Drawing Workbook; N. Kumar, S. C. Sharma, Dhanpat Rai Publishing Company.	2006
<b>3</b>	Engineering Graphics; A. M. Chandra, S. Chandra, CRC Press.	2003

## B. Tech. Mechanical Engineering Specialization in Automotive Engineering

<b>Course code: Course Title</b>	<b>Course Structure</b>			<b>Pre-Requisite</b>
<b>AE103: Workshop Practice</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>NIL</b>
	<b>1</b>	<b>0</b>	<b>2</b>	

**Course Objective:** The objective of the course is to familiarize the students with manufacturing shops like Carpentry, Foundry, Welding, Machining, Fitting and Smithy.

S. No	Course Outcomes (CO)
CO1	Describe the fundamentals of workshop practices.
CO2	Choose appropriate manufacturing processes/tools/techniques for various jobs.
CO3	Practice various tools and machinery to make different jobs in various shops of the workshop.
CO4	Demonstrate various techniques to study about various hazards in workshop and standard safety procedures.
CO5	Eperiment workshop practices in fabrication and integration of various components for research/ project/ professional work.

S. No	Contents
UNIT 1	Carpentry: Study of Different Carpentry Tools and Pattern Making of a given job (pulley/screw jack body).
UNIT 2	Foundry: Study of Different Foundry Tools and Furnaces Making a green sand mould of a given pattern (pulley/screw jack body) and its casting.
UNIT 3	Welding: Arc welding of butt joint, T-joint and lap joint Study of other welding/ joining Techniques.
UNIT 4	Machining: Study of lathe, milling, drilling machine, shaper, planer and grinding machine. Demonstration of a job on lathe.
UNIT 5	Fitting: Study of various fitting hand tools, marking and measuring devices Preparation of a given job (box / funnel).

<b>UNIT 6</b>	Smithy: Study of different forming tools and power press Preparation of a given job (bolt / chisel).
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<b>S.No.</b>	<b>Name of Books/Authors/Publishers</b>	<b>Year of Publication / Reprint</b>
<b>1</b>	Manufacturing Processes for Engineering Materials, 6e; Serope Kalpakjian, Steven R. Schmid, Pearson Education.	2018
<b>2</b>	Basic Mechanical Engineering; P. Kumar, Pearson Education, 1/e.	2018
<b>3</b>	Elements Of Workshop Technology Vol-1; S. K. H. Choudhary, A. K. H. Choudhary, N. Roy, Media Promoters.	2008
<b>4</b>	Workshop Technology; W. Chapman, Routledge.	1972
<b>5</b>	Production Engineering, R. K. Jain, Khanna Publishers.	1976