

MADHAV INSTITUTE OF TECHNOLOGY & SCIENCE, GWALIOR

(A Govt. Aided UGC Autonomous & NAAC Accredited Institute Affiliated to RGPV, Bhopal)

For batches admitted in Academic Session 2022-23

100014: Engineering Graphics

| Category | Title | Code | Credit-3 | | | Theory Slot |
|-------------------------|----------------------|---|----------|---|---|--|
| Engineering Science-ESC | Engineering Graphics | 100014/100105/CEL/MEL/CSL/ EEL/ELL/ITL/CHL/ BTL105/1X25/BEEL/BELL/ BETL/BCHL/BAUL105/ BCEL/BMEL/BCSL/ BITL/BBTL204 | L | T | P | Max.Marks-50 Min.Marks-16 Duration-2hrs. |
| | | | 1 | 2 | - | |

Course Objective:

1. To inculcate the imagination and mental visualization capabilities for interpreting the geometrical details of common engineering objects.
2. To impart knowledge about principles/methods related to projections of one,two and three dimensional objects.

Syllabus:

Unit - 1

Introduction and scale: Basics of instruments, Lettering and dimensioning, Plane geometrical constructions. Plain and diagonal scale - Representative fraction, Unit conversion and Exercises based on linear, area, volume and speed. Scale of chord.

Engineering curves: Cycloidal curves - cycloid, epicycloid and hypocycloid curve, tangent and normal. Spiral curves - Archimedean and logarithmic spiral curves. Tangent & normal on the curves. Involute curve.

Unit - 2

Projection of points: Introduction, types of projections, quadrant system, positions of points and Exercise.

Projection of straight line: Introduction, Orientation of a straight line, Traces of a line and Exercise.

Unit - 3

Projection of planes: Introduction, Types of planes, Traces of planes, Position of planes and Exercise.

Projection of solids: Introduction, Types of solids, Positions of solids and Exercise.

Unit - 4

Section of solids: introduction, Types of section planes and Anti-section and Exercise.

Development of surfaces of right solids: Introduction, Methods of development & anti-development and Exercise.

Intersection of cylinders: Introduction, methods of developments, intersection of cylinder by another cylinder and exercise.

Unit - 5

Isometric projections: Introduction, isometric scale, isometric axis, isometric view and isometric projections from orthographic views, orthographic views from pictorial view and exercise.

Computer Aided Drafting using Auto CAD: Introduction, software's basic commands, transformation and editing commands.

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Course Outcomes: After successful completion of this course students will be able to:

CO1. Visualize the geometric details of engineering objects.

CO2. Translate the geometric information of engineering objects into engineering drawings.

CO3. Draw orthographic projections and sections.

CO4. Develop knowledge to read, understand and explain drawing.

CO5. Improve their skills so that they can apply these skills in developing new products.

CO6. Prepare simple layout of factory, machine and buildings.

Text books:

1. Engineering Drawing by N. D. Bhatt, Charotar Publication Pvt. Ltd.
2. Engineering Drawing by P.S. Gill, S. K. kataria& sons, Delhi
3. Engineering Drawing by BasantAgrawal& C. M. Agrawal, Tata McGraw Hill Education Pvt. Ltd.
4. Engineering Graphics by K. Venugopal, New Age International Publication, India

NPTEL Link for Engineering Graphics:

<http://nptel.ac.in/courses/112103019/>

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Engineering Graphics Lab

| Category | Title | Code | Credit-1 | | | Practical End Sem |
|----------|-----------------------------|--------|----------|---|---|------------------------------|
| | | | L | T | P | |
| HSMC | Engineering Graphics Lab | 100018 | | | | Max.Marks-60 Min.Marks-19 |
| | | | - | - | 2 | |

Laboratory Work

List of Experiments:

1. To prepare sheet of Plain scale, diagonal scale and Scale of chord.
2. To prepare sheet of Cycloidal curves.
3. To prepare sheet of Projection of points and lines.
4. To prepare sheet of Projection of Planes.
5. To prepare sheet of Projection of Solids.
6. To prepare sheet of Section of Solids.
7. To prepare sheet of Development of Surfaces.
8. To prepare sheet of Isometric and Intersection of Solids

Skill Based Projects:

1. To prepare the 3D view of any object.
2. To Prepare scale for your home and make a map using this scale.
3. To prepare cut section models drawing of any object.
4. To make paper object, cut and show the development of surfaces.

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