

**SYLLABUS FOR
BE I-SEMESTER
(CBCS)**

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

BASIC ENGINEERING MECHANICS
(Common to Civil, Mechanical & EEE – I SEMESTER)
(Common to CSE, ECE & IT – II Semester)

SYLLABUS

Instruction	:	3 period per Week	Semester End Exam	:	60	Subject Reference Code	:	ES100CE
Credits	:	3	Sessional Marks	:	40	Duration of Sem. End Exam	:	3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>Objectives of this course are to:</i>	<i>At the end of the course, students will be able to:</i>
1. Explain the resolution of a system of forces (coplanar, spatial, concurrent, non-concurrent) and compute their resultant. 2. Solve particle equilibrium problem using equation of equilibrium 3. Determine forces in the members of a truss 4. Perform analysis of bodies lying on rough surfaces. 5. Locate the centroid of a body and also compute the area moment of inertia of standard and composite sections.	1. Determine resultant of forces acting on a body. 2. Analyse equilibrium of a body subjected to a system of forces. 3. Perform analysis of trusses using method of joints and method of sections. 4. Solve problem of bodies subjected to friction. 5. Find the location of centroid and calculate moment of inertia and polar moment of inertia of a given section.

- UNIT-I** : **Force Systems:** Rectangular components, moment, couple and resultant of two dimensional and three dimensional force systems.
- UNIT-II** : **Equilibrium of Force Systems:** Free body diagram, Equations of equilibrium, Equilibrium of planar and spatial system.
- UNIT-III** : **Determinate Trusses:** Analysis of plane trusses like warren girder, Pratt truss, fink truss etc using method of joints and method of sections.
- UNIT-IV** : **Friction:** Laws of friction. Application to simple systems, Connected systems and belt friction, Wedge friction.
- UNIT-V** : **Centroid and Moment of Inertia:** Centroids of lines, areas and volumes, Moment of inertia of areas, Composite areas, Polar moment of inertia, Radius of gyration.

Suggested Books:

1. Singer F.L “Engineering Mechanics”, Harper & Collins, Singapore, 3rd Edition 2011.
2. Timoshenko S.P and Young D.H “Engineering Mechanics”, McGraw Hill International Edition, 1983
3. Andrew Pytel., Jaan Kiusalaas., “Engineering Mechanics”, Cengage Learning, 2014.

Reference Books:

1. Beer F.P & Johnston E.R Jr. Vector “Mechanics for Engineers”, TMH, 2004.
2. Hibbeler R.C & Ashok Gupta, “Engineering Mechanics”, Pearson Education, 2010.
3. Tayal A.K., “Engineering Mechanics – Statics & Dynamics”, Umesh Publications, 2011.
4. Basudeb Bhattacharyya., “Engineering Mechanics”, Oxford University Press, 2008.
5. Meriam. J. L., “Engineering Mechanics”, Volume-I Statics, John Wiley & Sons, 2008.

Online Resource:

1. NPTEL Course (www.nptel.ac.in)
2. Virtual labs (www.vlab.co.in)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

ENGINEERING GRAPHICS-I
(Common to Civil, Mechanical & Electrical Engineering)
SYLLABUS FOR I-SEMESTER

Instruction	:	3+2 period per Week	Semester End Exam	:	60	Subject Reference Code	:	ES120CE
Credits	:	4	Sessional Marks	:	40	Duration of Sem. End Exam	:	3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>Objectives of this course are to:</i>	<i>At the end of the course, students will be able to:</i>
1. Impart skills of drawing instruments and their use to convey exact and complete information of any object. 2. Explore various scales in Engineering practice 3. Construct engineering curves. 4. Prepare orthographic projections of points, lines, planes and solids	1. Identify the qualities of precision and accuracy. 2. Convey technical information effectively through sketches / drawings. 3. Construct engineering curves with different methods. 4. Develop the conics using different methods, cycloidal and involutes. 5. Draw the orthographic projection of points, lines, planes and solids.

- UNIT-I** : **Introduction:** Instruments and their uses, lettering, types of lines and dimensioning methods.
Scales: Reduced and Enlarged scales, Representative fraction, Scales: plain, diagonal and vernier.
- UNIT-II** : **Engineering curves:** Ellipse, Parabola, Hyperbola, Cycloid, Epicycloid, Hypocycloid and Involute.
- UNIT-III** : **Projections of points and straight lines:** Orthographic projection, Projection of points placed in different quadrants, Projection of straight lines inclined to one and two reference planes placed in first quadrant only, Traces.
- UNIT-IV** : **Projections of planes:** Projection of perpendicular planes, Oblique planes, Traces of planes, use of Auxiliary plane method.
- UNIT-V** : **Projection of solids:** Polyhedra, Solids of revolution, Projections of solids in simple position (prisms, pyramids, cylinders and cone), axis inclined to one plane, Axis inclined to both the reference planes, Projection of solids using auxiliary plane method.

Text book:

1. Bhatt N.D. "Elementary Engineering Drawing", Charotar Publishers, 2014.

Reference Books:

1. Thomas E French, Charles J Vierck, Robert J. Foster, "Engineering Drawing and Graphic Technology", McGraw Hill Education, 1993.
2. Gill P.S. "Engineering Drawing: Geometrical Drawing", SK Kataria & sons, 2012.
3. Venugopal.K "Engineering Drawing and Graphics Plus Autocad", New Age International (P) Ltd., New Delhi, 2010.
4. Siddiquee A.N "Engineering Drawing with a Primer on Autocad", Prentice hall of India Ltd., New Delhi, 2004.
5. Basanth Agrawal, Agrawal C.M "Engineering Graphics" First Edition, Tata McGraw Hill, 2012
6. BVR Gupta, M Raja Roy, "Engineering Drawing with AutoCad", IK Int Pvt Ltd, 2009

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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

ENGINEERING DRAWING - I
 (Common to CSE, IT & ECE)
 SYLLABUS FOR I-SEMESTER

Instruction	:	3+2 period per Week	Semester End Exam	:	60	Subject Reference Code	:	ES130CE
Credits	:	4	Sessional Marks	:	40	Duration of Sem. End Exam	:	3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>Objectives of this course are to:</i>	<i>At the end of the course, students will be able to:</i>
1. Impart skills of drawing instruments and their use to convey exact and complete information of any object. 2. Explore various scales in Engineering practice 3. Construct engineering curves and polygons. 4. Prepare orthographic projections of points, lines, planes and solids	1. Identify the qualities of precision and accuracy. 2. Convey technical information effectively through sketches / drawings. 3. Construct engineering curves with different methods. 4. Develop the conics using different methods. 5. Draw the orthographic projection of points, lines, planes and solids.

- UNIT-I** : **Introduction:** Instruments and their uses, lettering, types of lines and dimensioning methods.
Scales: Reduced and Enlarged scales, Representative fraction, Scales: plain, diagonal and vernier.
- UNIT-II** : **Engineering curves:** Ellipse, Parabola, Hyperbola and their applications.
Polygons: Regular polygons using general method.
- UNIT-III** : **Projections of points and straight lines:** Orthographic projection, Projection of points placed in different quadrants, Projection of straight lines inclined to one and two reference planes placed in first quadrant only, Traces.
- UNIT-IV** : **Projections of planes:** Projection of perpendicular planes, Oblique planes, Traces of planes.
- UNIT-V** : **Projection of solids:** Polyhedra, Solids of revolution, Projections of solids in simple position (prisms, pyramids, cylinders and cone), axis inclined to one plane, Axis inclined to both the reference planes. Projection of solids using auxiliary plane method.

Text book:

- Bhatt N.D. "Elementary Engineering Drawing", Charotar Publishers, 2014.

Reference Books:

- Thomas E French, Charles J Vierck, Robert J. Foster, "Engineering Drawing and Graphic Technology", McGraw Hill Education, 1993.
- Gill P.S. "Engineering Drawing: Geometrical Drawing", SK Kataria & sons, 2012.
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- Siddiquee A.N "Engineering Drawing with a Primer on Autocad", Prentice hall of India Ltd., New Delhi, 2004.
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**SYLLABUS FOR
BE II-SEMESTER
(CBCS)**

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

ENGINEERING MECHANICS
(Common to Civil, Mechanical & EEE)
SYLLABUS FOR II-SEMESTER

Instruction	:	3 period per Week	Semester End Exam	:	60	Subject Reference Code	:	ES220CE
Credits	:	3	Sessional Marks	:	40	Duration of Sem. End Exam	:	3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>Objectives of this course are to:</i>	<i>At the end of the course, students will be able to:</i>
1. Determine the mass moment of inertia and product of inertia of standard and composite sections. 2. Understand the concepts of dynamics and its principles. 3. Explain kinetics and kinematics of particles, projectiles, curvilinear motion, centroidal motion and plane motion of rigid bodies. 4. Impart the concepts of work-energy method and its applications to translation, rotation and plane motion. 5. Impart the concept of impulse momentum relation	1. Compute mass moment of inertia and product of inertia of standard and composite section. 2. Distinguish between statics and dynamics and differentiate between kinematics and kinetics. 3. Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion. 4. Solve problems using work energy equations for translation, fixed axis rotation and plane motion. 5. Solve problems using impulse momentum equation

UNIT-I Product of Inertia & Mass moment of Inertia : Product of inertia , Mass moment of inertia for solid and composite bodies, Radius of gyration.

UNIT – II Kinematics: Rectilinear motion, Curvilinear motion, Projectile motion, Velocity and acceleration, Types of rigid body motion, and its analysis in a plane.

UNIT-III Kinetics: Analysis as a particle, Analysis as a rigid body in translation, Fixed axis rotation. Rolling bodies, Plane motion.

UNIT –IV Work Energy: Principles of work-energy and its application to translation, Fixed axis rotation and plane motion.

UNIT-V Impulse and momentum: Introduction, linear impulse-momentum, principle of conservation of linear momentum, loss of kinetic energy.

Suggested Books:

1. Singer F.L “Engineering Mechanics”, Harper & Collins, Singapore, 3rd Edition 2011.
2. Timoshenko S.P and Young D.H., “Engineering Mechanics”, McGraw Hill International Edition, 1983.
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Reference Books:

1. Beer F.P & Johnston E.R Jr. Vector, “Mechanics for Engineers”, TMH, 2004.
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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

ENGINEERING GRAPHICS-II
(Common to Civil, Mechanical & Electrical Engineering)
SYLLABUS FOR II-SEMESTER

Instruction	:	3 +2 period per Week	Semester End Exam	:	60	Subject Reference Code	:	ES220CE
Credits	:	4	Sessional Marks	:	40	Duration of Sem. End Exam	:	3 Hrs

Course Objectives	Course Outcomes
<i>Objectives of this course are to:</i>	<i>At the end of the course, students will be able to:</i>
1. Explain the principles involved in Section of simple solids 2. Develop surfaces of simple solids 3. Explain intersection of cylinder with cylinder and cylinder with cone 4. Differentiate between isometric view and isometric projection 5. Draw orthographic views from pictorial views	1. Draw sectional views of simple solids 2. Develop the lateral surfaces of simple solids 3. Prepare orthographic views of intersection of solids. 4. Visualize isometric view of simple planes, solids and combined solids 5. Construct orthographic views of simple objects from their pictorial views

UNIT-I Sections of Solids: True shape of sections, sections of prisms, pyramids, cylinders and cones.

UNIT – II Development of Surfaces: Basic concepts of development of surfaces, Methods of development – Parallel line development and radial line development, Development of prisms, pyramids, Cylinders and cones.

UNIT-III Intersection of Surfaces: Intersection of cylinder and cylinder, cylinder and cone.

UNIT –IV Isometric Projections: Isometric scale, Isometric projections of prisms, pyramids, cylinders, cones, spheres, and combinations of two or three solids.

UNIT-V Conversion of Isometric Views to Ortho-graphic views: Drawing orthographic views from Isometric views for simple objects.

Text book:

1. Bhatt N.D. “Elementary Engineering Drawing”, Charotar Publishers, 2014.

Reference Books:

1. Thomas E French, Charles J Vierck, Robert J. Foster, “Engineering Drawing and Graphic Technology”, McGraw Hill Education, 1993.
2. Gill P.S. “Engineering Drawing: Geometrical Drawing”, SK Kataria & sons, 2012.
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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

ENGINEERING DRAWING - II
(Common to CSE, IT & ECE)
SYLLABUS FOR II-SEMESTER

Instruction	:	3 +2 period per Week	Semester End Exam	:	60	Subject Reference Code	:	ES230CE
Credits	:	4	Sessional Marks	:	40	Duration of Sem. End Exam	:	3 Hrs

Course Objectives	Course Outcomes
<i>Objectives of this course are to:</i>	<i>At the end of the course, students will be able to:</i>
1. Explain the principles involved in Section of simple solids 2. Develop surfaces of simple solids 3. Explain intersection of prism with prism and cylinder with cylinder. 4. Differentiate between isometric view and isometric projection 5. Draw orthographic views from pictorial views	1. Draw sectional views of simple solids 2. Develop the lateral surfaces of simple solids 3. Prepare orthographic views of intersection of solids. 4. Visualize isometric view of simple planes, solids and combined solids 5. Construct orthographic views of simple objects from their pictorial views

- UNIT-I Sections of Solids:** True shape of sections, sections of prisms, pyramids, cylinders and cones in simple positions and axis inclined to one reference plane only.
- UNIT – II Development of Surfaces:** Basic concepts of development of surfaces, Methods of development – Parallel line development and radial line development, Development of prisms, pyramids, Cylinders and cones.
- UNIT-III Intersection of Surfaces:** Intersection of prism and prism, cylinder and cylinder.
- UNIT –IV Isometric Projections:** Isometric scale, Isometric projections of prisms, pyramids, cylinders, cones, spheres, and combinations of two solids.
- UNIT-V Conversion of Isometric Views to Ortho-graphic views:** Drawing orthographic views from Isometric views for simple objects.

Text book:

1. Bhatt N.D. “Elementary Engineering Drawing”, Charotar Publishers, 2014.

Reference Books:

1. Thomas E French, Charles J Vierck, Robert J. Foster, “Engineering Drawing and Graphic Technology”, McGraw Hill Education, 1993.
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