VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
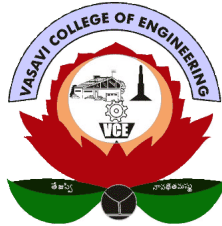# IBRAHIMBAGH, HYDERABAD-31

Approved by A.I.C.T.E., New Delhi and
Affiliated to Osmania University, Hyderabad-07

Sponsored by
VASAVI ACADEMY OF EDUCATION
Hyderabad

SYLLABUS BOOK FOR
B.E (CIVIL) I and II SEMESTER
UNDER CBCS WITH EFFECT FROM 2025–2026
(For the students admitted in 2025-26)

DEPARTMENT OF CIVIL ENGINEERING
+91-40-23146010, 23146011
Fax: +91-40-23146090
Website: www.vce.ac.in

DEPARTMENT MISSION

"To strive for excellence in order to make the students better citizens with technical knowledge andsocial awareness"

DEPARTMENT VISION

"To impart knowledge in the latest technologies to the students of civil engineering to fulfil the growing needs of the society."

Institution Vision

"Striving for a symbiosis of technological excellence and human values."

Institution Mission

"To arm young brains with competitive technology and nurture holistic development of the individuals for a better tomorrow."

Department Vision

To strive for excellence in order to make the students better citizens with technical knowledge and social awareness

Department Mission

To impart knowledge in the latest technologies to the students of civil engineering to fulfil the growing needs of the society.

Program Educational Objectives (PEOs):

1. To provide a better understanding of basic sciences and fundamentals of civil engineering.

2. To develop competence in latest technologies to serve the industry or pursue higher studies.

3. To inculcate professionalism with effective communication skills and ethical values.

Program Outcomes (POs)

Engineering Graduates will be able to:

1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

1. Understand various concepts of basic engineering sciences and mathematics to learn advanced concepts of Civil Engineering and apply them to practical problems.

2. Apply principles of various specializations of Civil engineering including structural engineering, transportation engineering, environmental engineering, water resources engineering and Geotechnical engineering to tackle engineering problems.

3. Acquire knowledge of ethical practices, communication skills, technical report writing skills and collaborative effort leading to lifelong learning.

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION (R-25)
BE (CIVIL ENGINEERING) I-SEMESTER ACADEMIC YEAR 2025-2026
(Students Admitted in 2025-26)

Course Code	Name of the Course	Scheme of Instruction Hours per Week L	T	P/D	Scheme of Examination Duration in Hrs	Maximum Marks SEE	CIE	Credits
THEORY								
U25HS010EH	Human Values and Professional Ethics-I	1	-	-	2	40	30	1
U25BS110CH	Applied Chemistry for Civil Engineering	2	-	-	3	60	40	2
U25BS110MA	Matrices and Calculus	3	-	-	3	60	40	3
U25ES110CE	Engineering Mechanics –Statics	3	-	-	3	60	40	3
U25ES120CE	Engineering Drawing – I	1	-	2	3	60	40	2
U25ES110EE	Basic Electrical Engineering for Civil Engineers	2	-	-	3	60	40	2
U25MC010CE	Environmental Science	1	-	-	2	40	30	-
PRACTICALS								
U25BS011CH	Chemistry Lab	-	-	2	3	50	30	1
U25ES111EE	Basic Electrical Engineering Lab for Civil Engineers	-	-	2	3	50	30	1
U25ES012ME	Workshop Practice	-	-	2	3	50	30	1
Student should complete one NPTEL (8 weeks) certificate course equivalent to 2 credits by the end of VI-Semester								
Total		**13**	**-**	**8**		**530**	**350**	**16**
Grand Total		**21**				**880**		
Note: The left over hours are to be allotted to Sports / Library / Mentor Interaction/CC/RC/TC/PDC based on the requirement.								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION (R-25)
BE (CIVIL ENGINEERING) I-SEMESTER ACADEMIC YEAR 2025-2026
(Students Admitted in 2025-26)

SERVICE COURSES OFFERED BY CIVIL ENGINEERING

Course Code	Name of the Course	Scheme of Instruction Hours per Week			Scheme of Examination			Credits
		L	T	P/D	Duration in Hrs	Maximum Marks SEE	CIE	
Theory (Common to CSE & IT)								
U25ES030CE	Basic Engineering Drawing	1	-	2	3	60	40	2
Theory (Common to Mech. EEE, & ECE)								
U25MC010CE	Environmental Science	1	-	-	2	40	30	-
Theory (Common to CSE, ECE & EEE)								
U25ES010CE	Basic Engineering Mechanics	2	-	-	3	60	40	2
Theory (Mech.)								
U25ES110CE	Engineering Mechanics-Statics	3	-	-	3	60	40	3
Theory (Mech.)								
U25ES120CE	Engineering Drawing – I	1	-	2	3	60	40	2

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS),
IBRAHIMBAGH, HYDERABAD-500031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
HUMAN VALUES AND PFOFESSIONAL ETHICS-I
(Common to all branches)

SYLLABUS FOR I- SEMESTERS

L: T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code:U25HS010EH
Credits:1	CIE Marks: 30	Duration of SEE: 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Get a holistic perspective of value- based education. 2. Grasp the meaning of basic human aspirations vis-a-vis the professional aspirations 3. Understand professionalism in harmony with self and society. 4. Develop ethical human conduct and professional competence. 5. Enrich their interactions with the world around, both professional and personal.	1. Understand the significance of value inputs in a classroom and start applying them in their life and profession 2. Distinguish between Personal and Professional life goals–constantly evolving into better human beings and professionals. 3. Work out the strategy to actualize a harmonious environment wherever they work. 4. Distinguish between ethical and unethical practices, and start implementing ethical practices 5. Apply ethics and values in their personal and professional interactions.

UNIT-1 HARMONY WITH SELF AND FAMILY

Understanding and living in harmony at various levels-with self, family, society and nature   and the Ethical and moral values**:** which include self-sufficiency, self-determination, self-advocacy, self-competence, self-direction, self-efficacies, self-regulation, self-reliance, and self-responsibility. This also includes Family values involving all the ideas of how you want to live your family life, and they are often passed down from previous generations.

1.1 Self-Values and Ethics
1.2 Family – Values and Ethics
1.3 Self-Care Practices

UNIT-2   PROFESSIONAL VALUES AND BEHAVIOUR

At the level of individuals: as socially and ecologically responsible engineers and technologists. Team Work:Developing Credibility and building trust by having open and truthful communication. This includes recognizing the value of time and respecting time of self and others.

2.1 Professional Ethics – Individual

2.2 Professional Behaviour - Body Language and Etiquette

2.3 Professional Ethics – Team

UNIT-3   SOCIAL VALUES

Values of service, social justice, dignity and worth of the personImportance of human relationships, integrity, and competence.

3.1 Understanding Social Values

3.2 Importance of relationship

3.3 Diversity and Inclusion

UNIT -4   SPIRITUAL VALUES

Developing individual practice has to do with having a sense of peace and purpose. Spiritual values, namely, benevolence, charity, dignity, forbearance, hope, humility, kindness, love, modesty, peace, perseverance, piety, repentance, righteous, sacredness, sincerity, steadfastness, striving, trusting, truthfulness, unity, and wisdom.

4.1 Exploring Different Traditions

4.2 Values in Action

4.3 Spirituality in Everyday Life

MODE of DELIVERY

● Questionnaires	● Discussions
● Quizzes	● Skits
● Case-studies	● Short Movies/documentaries
● Observations and practice	● Team tasks and individual tasks
● Home and classroom assignments	
● VIVA	● Research based tasks

Relevant Websites, CD's and Documentaries

- https://plato.stanford.edu/

Learning Resources:

1. learn.talentsprint.com
2. Sapiens: A Brief History of Humankind By Yuval Noah Harari

3. How to Think About What You Don't Know: The Art of Counterfactual Thinking by Judith Lichtenberg
4. Ethics in the Professions by Charles E. W. Tessera
5. Thinking in Ethics: A Practical Guide to Right and Wrong by Jeanne Halifax

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	1	Max. Marks for each Internal Test	:	20
2	No. of Assignments	:	2	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	2	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CHEMISTRY
APPLIED CHEMISTRY FOR CIVIL ENGINEERING
(Common to Civil & Mechanical Engineering)

SYLLABUS FOR B.E. I SEMESTER

| L : T : P(Hrs./week):2 : 0 : 0 | SEE Marks:60 | Course Code: U25BS110CE |
| Credits: 3 | CIE Marks:40 | Duration of SEE: 3 Hrs |

COURSE OBJECTIVES:	COURSE OUTCOMES
The course will enable the students to:	At the end of the course students should be able to:
1. Study types of conductance, variation of electrode potential and EMF and to acquaint with applications of Galvanic Cell. 2. Classify and compare various types of batteries and fuel cells. 3. Get acquainted with different types of polymers, composites and their applications. 4. Apply the concepts of electrochemical principles in corrosion and its control.	1. Construct a galvanic cell and calculate its EMF and pH wherever applicable. 2. Describe the construction, functioning and applications of the selected primary, secondary batteries and fuel cells. 3. Classify polymers and composites, explain their preparation and applications. 4. Explain the gravity, type of corrosion and suggest suitable control method.

UNIT-I: ELECTROCHEMISTRY: Introduction, conductance, types of conductance–specific, equivalent, molar conductance and their interrelationship- numericals. Principle and applications of conductometric titrations – strong acid *vs* strong base, week acid *vs* strong base and mixture of acids *vs* strong base.

Cells–electrolytic and electrochemical cells. Nernst equation-derivation, applications and numericals. Types of electrodes- construction and working of calomel electrode (CE), quinhydrone electrode and glass electrode (GE). Determination of pH using glass electrode and quinhydrone electrode. Applications of potentiometry – acid base titrations.

UNIT-II: CHEMISTRY OF BATTERIES: Introduction- definition of cell and battery – Types of cells (reversible and irreversible cells). Battery characteristics: free energy change, electromotive force of battery, power density, energy density – numericals.

Primary batteries: Construction and electrochemistry of $Zn-Ag_2O$ battery and lithium-V_2O_5 battery.

Secondary batteries: Construction and working of lead-acid storage cell and lithium ion battery – advantages, limitations and applications.

Fuel cells: Concept, types of fuel cells and merits. Construction, working and applications of methanol-oxygen fuel cell and phosphoric acid fuel cell.

UNIT-III: POLYMER CHEMISTRY: Introduction, degree of polymerization, functionality of monomers and its effect on structure of the polymer, Classification of polymers – i) homo and co-polymers; ii) homo chain and hetero chain polymers; iii) plastics, elastomers, fibers and resins.

Plastics: Thermo plastics and thermosets – preparation, properties and applications of i) Epoxy resin (bisphenol and epichlorohydrin) ii) PVC (Plasticized and unplasticized) .

Polymer composites: Introduction, advantages of composites over conventional materials, Classification of composites. Manufacturing methods-Hand lay up and RTM method.

Biodegradable polymers: Concept, preparation and uses of polylactic acid and polyvinyl alcohol.

Conducting polymers: Definition- classification, mechanism of conduction in polyacetylene(Undoped) and applications.

UNIT-IV- CORROSION AND ITS CONTROL: Concept, Gravity of corrosion-Types of corrosion (Dry & Wet), Mechanism of wet corrosion. Formation of anodic and cathodic areas-Differential aeration corrosion and Galvanic corrosion- Galvanic series, factors influencing corrosion.

Nature of metal: Relative areas of anode & cathode, Nature of corrosion product, Relative position of metal in galvanic series.

Nature of environment: Temperature, pH and humidity.

Corrosion control methods: Methods of application of metallic coatings-Hot dipping (Galvanization process), principle of electro plating & electro less plating and their differences, Electroplating (Cu coating on Fe), Cathodic protection, Sacrificial Anodic Protection (SAP), Impressed Current Cathodic Protection (ICCP).

Learning Resources:
1. P. C. Jain, M Jain Engineering Chemistry, Dhanapathi Rai publishing company (17th edition), New Delhi.
2. O. G. PALANNA, Engineering Chemistry, TMH Edition.
3. B. H. Mahan, University Chemistry.
4. B. L. Tembe, Kamaluddin and M. S. Krishnan, Engineering Chemistry (NPTEL Web-book).
5. P. W. Atkins, Physical Chemistry.

6. S. S. Dara, S Chand and sons, Engineering Chemistry, New Delhi.
7. Puri, Sharma and Pathania, Principles of Physical Chemistry, Vishal Publishing Co.
8. D. Dhara, IIT Kharagpur, NPTEL Polymer Chemistry Course.
9. Gowarikar V R, Polymer chemistry, V Edition.
10. S M Lindsay, Introduction to Nanoscience, Oxford University press.
11. Sashi Chawla, Text book of Engineering Chemistry, Dhanapathi Rai & Co, New Delhi.
12. J.C. Kuriacose and Rajaram, Chemistry in Engineering and Technology
13. Wiley Engineering Chemistry, Wiley India pvt Ltd, II edition.
14. Peter Grundler, Chemical sensors, An introduction for scientists and engineers, Springers

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MATHEMATICS
MATRICES & CALCULUS
(Common to Civil, EEE, ECE & Mechanical Engineering)

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):3 : 1 : 0	SEE Marks:60	Course Code: U25ES110CE
Credits: 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	*At the end of the course students should be able to:*
1. Study the concepts of rank of a matrix, System of linear equations and LU-Decomposition method. 2. Learn the concepts of eigen values, eigen vectors and diagonalization. 3. Develop a deep understanding of the concepts and applications of Taylor's series, Maclaurin's series, curvature, radius of curvature, centre of curvature, and evolutes. 4. Learn the techniques for finding partial derivatives of functions of several variables, Taylor's series for functions of two variables and methods for finding maxima and minima of functions of several variables. 5. Understand the fundamental concepts of infinite series and various tests for convergence.	1. Compute the rank of a given matrix and solution of a system by LU-Decomposition method. 2. Find the characteristic equation, eigen values, and eigen vectors and to diagonalize a square matrix using similarity transformation. 3. Apply the concepts of Taylor's series and Maclaurin's series to approximate functions and to find the curvature, radius, centre of curvature and evolutes of curves. 4. Calculate partial derivatives of functions of several variables and apply Taylor's series for functions of two variables, analyze functions to find maxima and minima. 5. Identify an appropriate test and determine nature of a series.

UNIT-I:MATRICES-I: Rank of a Matrix- Echelon form - Linearly Dependence and Independence of Vectors– Consistency and Inconsistency of Homogeneous and Non-Homogenous system of linear equations.

UNIT–II:MATRICES-II: Characteristic equation- Cayley - Hamilton Theorem (without proof) -Eigen values and Eigen vectors - Diagonalization using Orthogonal Transformation-Quadratic form- Reduction of Quadratic form to Canonical form.

UNIT–III: DIFFERENTIAL CALCULUS: Taylor's Series – Maclaurin's Series - Curvature - Radius of Curvature – Centre of Curvature – Evolutes (Cartesian and Parametric forms of the curves).

UNIT–IV : MULTIVARIBLE CALCULUS: Limits- Continuity (Concepts)-Partial Derivatives-Higher Order Partial Derivatives-Total Derivates- Derivatives of Composite and implicit functions-Taylor's series of functions of two variables-Maxima and Minima of functions of two variables-Lagrange's Method of multipliers.

UNIT-V: INFINITE SERIES: Introduction to Infinite Series-Nature of the Series–Series of positive terms - Geometric series-p-series test - Comparison tests – Limit form of comparison test - D'Alembert's Ratio Test – Cauchy's n^{th} root test - Alternating Series – Leibnitz test – Absolute Convergence.

Learning Resources:
1. Advanced Engineering Mathematics, Third Edition, R. K. Jain and S. R. K. Iyengar, Narosa Publishing House.
2. Higher Engineering Mathematics, B. S. Grewal $40^{th.}$ Edition, Khanna Publishers.
3. Advanced Engineering Mathematics 8th Edition by Erwin Kreyszig, John Wiley & Sons.
4. Differential Calculus by Shanti Narayan, S. Chand & Co
5. Vector Calculus – Schaum's outline series.
6. https://onlinecourses.nptel.ac.in/noc24_ma03/preview
7. https://onlinecourses.nptel.ac.in/noc24_ma31/preview
8. https://onlinecourses.swayam2.ac.in/cec24_ma10/preview

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
ENGINEERING MECHANICS-STATICS
(Common to Civil & Mechanical Engineering)

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):3 : 0 : 0	SEE Marks:60	Course Code: U25ES110CE
Credits: 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Explain the resolution of a system of forces (coplanar, 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 sections, along with product of inertia and mass moment of inertia.	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 of a given section, along also able to find product of inertia and mass moment of inertia for given shape.

UNIT-I: Force Systems: Rectangular components, moment, couple and resultant of two dimensional force systems.

UNIT-II: Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of two dimensional force systems.

UNIT-III: Determinate Trusses: Analysis of plane trusses like Warren truss, 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 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.

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

Learning Resources:
1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2023.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., JaanKiusalaas., "Engineering Mechanics", 4th edition, Cengage Learning, 2015.
4. Beer F.P & Johnston E.R Jr. "VectorMechanics for Engineers", TMH, 2019.
5. Hibbeler R.C, "Engineering Mechanics", 4th edition, Pearson Education, 2017.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", 4th Edition, Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2014, 2nd Edition
8. Meriam. J. L. and Kraige L.G., "Engineering Mechanics", Volume-I Statics, John Wiley & Sons, 2017.
9. NPTEL Course (www.nptel.ac.in)
10. Virtual labs (www.vlab.co.in)

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
ENGINEERING DRAWING-I
(Common to Civil & Mechanical Engineering)

SYLLABUS FOR B.E. I-SEMESTER

L : T : P (Hrs./week):1:0 :2	SEE Marks:60	Course Code: U25ES120CE
Credits: 2	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
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, hypocycloidal and involutes. 5. Draw the orthographic projection of points, lines, planes and solids.

UNIT-I: Introduction: Instruments and their ruses, lettering, types of lines and dimensioning methods.
Introduction to Representative fraction: Regular Polygons: Polygons given the length of side only.

UNIT-II: Engineering Curves: Ellipse, Parabola and Hyperbola (Eccentricity method only), Cycloid, Epicycloids, Hypocycloid and Involutes.

UNIT-III: Projection 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 and Traces of planes.

UNIT-V: Projection of Solids: Polyhedral, Solids of revolution, Projections of solids in simple position (prisms, pyramids, cylinders and cones), axis inclined to one plane, Axis inclined to both the reference planes, Projection of solids using auxiliary plane method.

Learning Resources:
1. Bhatt N.D. "Elementary Engineering Drawing",CharotarPublishers,54th edition, 2023.
2. Thomas EFrench, Charles J Vierck, Robert J. Foster, "Engineering Drawing and Graphic Technology", McGraw Hill Education, 2012.
3. Gill P.S. "Engineering Drawing": Geometric Drawing",SKKataria&sons, 2012.
4. Venugopal.K "Engineering Drawing and Graphics Plus Autocad"NewAgeInternational(P)Ltd., NewDelhi,2010.
5. Siddiquee A.N "Engineering Drawing with a Primer on Autocad", Prentichall of India Ltd, New Delhi, 2004.
6. Basanth Agrawal, Agrawal C.M. "Engineering Graphics" First Edition, Tata Mc Graw Hills, 2013.
7. BVR Gupta, M. Raja Roy, "Engineering Drawing with Autocad", IKInt Pvt. Ltd, 2009.
8. NPTEL Course (www.nptel.ac.in)
9. Virtual labs (www.vlab.co.in)

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests   :   90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
BASIC ELECTRICAL ENGINEERING FOR CIVIL ENGINEERS

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):2 : 0 : 0	SEE Marks:60	Course Code: U25ES110EE
Credits: 2	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. To provide an understanding of basics in Electrical circuits. 2. To explain the working principles of Electrical Machines.	1. Analyze Electrical DC circuits to compute and measure the Parameters of them 2. Analyze Electrical AC circuits to compute and measure the Parameters of them 3. Comprehend the working principles of Electrical DC Machines. 4. Comprehend the working principle of electrical AC machines.

UNIT-I:D.C.Circuits: Electrical circuit elements (R, L and C), independent voltage and current sources, Kirchhoff current and voltage laws, Mesh Analysis, Nodal analysis, Superposition theorem.

UNIT-II: A.C. Circuits: Representation of sinusoidal waveform - peak and rms values, form factor, phasor representation, real power, reactive power, apparent power, power factor, Energy, Analysis of single-phase ac series combinations of R-L-C circuits Three-phase balanced circuits,voltage and current relations in star and delta connections.

UNIT-III: DC Machines: Construction, Working principle of DC Generator and DC motor, EMF equation, Types of DC Generators & motors, Torque in a DC motor, Torque – speed characteristic of DC Shunt motor, Speed control of DC shunt motor.

UNIT-IV: AC Machines & Applications: Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, torque- slip characteristics, Principle and Application of Motors in Lifts, Elevators, Conveyor belts and escalators.

Learning Resources:
1. D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.
2. D. C. Kulshreshtha, "Basic Electrical Engineering", McGraw Hill, 2009.
3. L.S.Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.
4. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.
5. V.K Mehta, Rohit Mehta, "Principles of Electrical Engineering and Electronics", S Chand & Company Ltd, 2006.
6. J.B. Guptha, A course in electrical installation estimating and costing, reprint 2013, published by S.K. Kataria&Sons.
7. 10.V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.

The break-up of CIE: Internal Tests + Assignments + Quizzes
1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
ENVIRONMENTAL SCIENCE
(Common to Civil, EEE, ECE & Mech.)

SYLLABUS FOR B.E. I SEMESTER

L : T : P (Hrs./week): 1 : 0 : 0	SEE Marks: 40	Course Code: U25MC010CE
Credits : - - -	CIE Marks:30	Duration of SEE: 2 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
In this subject the students will	*Upon the completion of this course students will be able to*
1. Explain the scope and fundamental principles of environmental science, including key concepts such as ecosystem structure, function, and biodiversity.	1. Define and illustrate core environmental science concepts—ecosystem structure, energy flow and levels of biodiversity.
2. Characterize genetic, species, and ecosystem diversity, and articulate the various values of biodiversity.	2. Apply key legislative frameworks to real-world scenarios involving air, water, and land resource management.
3. Analyze the causes, effects, and control measures for air, water, and land pollution—and apply major regulatory frameworks	3. Analyze the environmental fate and impacts of agricultural inputs on food systems, recommending sustainable practices.
4. Evaluate the environmental impacts of food-related practices and propose sustainable, health-oriented alternatives.	4. Compare and evaluate major renewable energy technologies in terms of availability, efficiency, cost, and environmental footprint.
5. Assess renewable energy resources and design integrated, engineering-based solutions that meet environmental, legal, and societal requirements.	5. Integrate scientific data, legal requirements, and engineering principles to design a mini-project addressing a local environmental challenge.

UNIT-I: Environmental Science Fundamentals and Ecosystem Diversity: Definition and importance of Environmental Science, Ecosystem: classification, structure, and function, Diversity: genetic, species, and ecosystem level. Biodiversity values: productive, consumptive, ethical, social, cultural, optional, Biodiversity Acts and Laws: The Biological Diversity Act-2002, Environment (Protection) Act- 1986.

UNIT-II: Air, Water, and Land Resources: Air Pollution: The Air (Prevention and Control of Pollution) Act- 1981, Water Resource: Freshwater availability on Earth, Drinking water quality standards | IS 10500:1991, Water pollution: effects and control measures, Case studies. Land Resource: Desertification, Land degradation: causes, effects, and control, Case studies

UNIT-III: Food Resources and Environmental Issues: Food Resource: Fertilizer and pesticide problems, Eutrophication, Biomagnification, Balanced diet, Effects of processed food, Case studies

UNIT-IV: Renewable Energy Resources and current relevant issues: Importance of renewable energy sources: Solar, Wind, Tidal, Ocean thermal, Geothermal, Biomass, Biofuel, Biogas, Hydrogen energy, Case studies, Climate change adaptation Sustainability, life cycle assessment, use of AI in disaster risk reduction.

Learning Resources:
1. Deswal S. and Deswal A., A Basic Course on Environmental studies, Dhanpat Rai & Co Pvt. Ltd. 2021.
2. Anubha Kaushik and C.P Kaushik Environmental Studies, 4th Edition 2019
3. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2017.
4. Suresh K. Dhameja, Environmental Studies, S.K. Kataria & Sons, 2024.
5. De A.K., Environmental Chemistry, New Age International, 2021.
6. Rajagopalan R., Environmental Studies, Second Edition, Oxford University Press, 2015.

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	1	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	2	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	2	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
BASIC ENGINEERING DRAWING
(Common to CSE, CSE AIML & IT)

SYLLABUS FOR B.E. I-SEMESTER

L:T:P(Hrs./week):1:0:2	SEE Marks: 60	CourseCode:U25ES030CE
Credits:2	CIEMarks: 40	DurationofSEE:3Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Impart skills in using drawing instruments to convey exact and complete information of the object. 2. Construct conic sections and regular polygons. 3. Construct the orthographic projections of points, lines, planes and solids.	1. Understand the fundamentals of drawing, Draw polygons and Conics. 2. Draw the orthographic projections of points and straight lines. 3. Draw the orthographic projections of planes inclined to both reference planes. 4. Draw the orthographic projections of solids inclined to one reference plane.

UNIT-I: Introduction to Engineering Drawing: Necessity of Engineering Drawing for engineers, Use of Drawing Instruments, Types of Lines, Lettering practice, Dimensioning and its methods, Conic sections by eccentricity method, Regular polygons given the length of side.

UNIT-II: Orthographic Projections: Principles of orthographic projections, conventions, projections of points placed in different quadrants.

Projections of straight lines inclined to one and two reference planes placed infirst quadrant – Determination of final projections given true length and inclinations; Determination of true length and inclinations given projections ($\theta+\phi<90°$Only)

UNIT-III: Projections of Planes: Projections of perpendicular planes, oblique planes- cases of an element of plane in HP or VP only.

UNIT-IV: Projections of Regular Solids: Projections of prism, cylinder, pyramid and cone in simple positions and axis inclined to one reference plane.

Learning Resource:
1. Bhatt N.D. "Elementary Engineering Drawing", Charotar Publishers,54th Edition, 2023.
2. Basanth Agrawal, Agrawal C.M " Engineering Drawing" Second Edition, Tata McGraw Hill,2019
3. Thomas E French, Charles J Vierck, Robert J. Foster,"Engineering Drawing and Graphic Technology",Mc Graw Hill Education, 1993.
4. GillP.S."Engineering Drawing: Geometrical Drawing",S K Kataria & sons,13th Edition, 2021.
5. Venugopal.K"Engineering Drawing and Graphics Plus Autocad",New Age International (P) Ltd., New Delhi,2011.
6. Siddiquee A.N" Engineering Drawing with a Primer on Autocad",Prentice hall of India Ltd., New Delhi,2004.
7. BVR Gupta, M RajaRoy, "Engineering Drawing with AutoCad",IK Int Pvt Ltd,2020.
8. NPTELCourse(www.nptel.ac.in)
9. Virtuallabs(www.vlab.co.in)

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
BASIC ENGINEERING MECHANICS
(Common to CSE, CSE AIML, ECE, EEE)

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):2 : 0 : 0	SEE Marks:60	Course Code: U25ES010CE
Credits: 2	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Explain the resolution of a system of forces (coplanar, 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 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.

UNIT-I: Force Systems: Rectangular components, moment, couple and resultant of two dimensional force systems.

UNIT-II: Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of two dimensional force systems.

UNIT-III: Determinate Trusses: Analysis of plane trusses like Warren truss, 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 Wedge friction.

UNIT-V: Centroid and Moment of Inertia: Centroids of lines, areas, Moment of inertia of areas for regular bodies (T, I & C-Sections)

Learning Resources:
1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2023.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., JaanKiusalaas., "Engineering Mechanics", 4th edition, Cengage Learning, 2015.
4. Beer F.P & Johnston E.R Jr. "VectorMechanics for Engineers", TMH, 2019.
5. Hibbeler R.C, "Engineering Mechanics", 4th edition, Pearson Education, 2017.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", 4th Edition, Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2014, 2nd Edition
8. Meriam. J. L. and Kraige L.G., "Engineering Mechanics", Volume-I Statics, John Wiley & Sons, 2017.
9. NPTEL Course (www.nptel.ac.in)
10. Virtual labs (www.vlab.co.in)

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests   :   90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CHEMISTRY
CHEMISTRY LAB

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):0 : 0 : 2	SEE Marks:50	Course Code: U25BS011CH
Credits: 1	CIE Marks:30	Duration of SEE: 3 Hrs

COURSE OBJECTIVES:	COURSE OUTCOMES:
The course will enable the students to:	At the end of the course, students should be able to:
1. Promote adherence to laboratory safety precautions and ethical scientific practices 2. Describe the quantitative analytical techniques 3. Learn the skills to handle the instruments 4. Apply the theoretical principles in experiments	1. Estimate the amount of metal ions in the given solutions. 2. Analyze the hardness, alkalinity and chloride content of a given water sample. 3. Determine the concentration a given solution by conductometry, potentiometry and pH metry. 4. Use the principle of colorimetry in the estimation of Permanganate / Copper (II) in a given solution.

1. Preparation of standard FAS or oxalic acid solution and standardization of $KMnO_4$ or NaOH solution.
2. Estimation of Iron(II) in the given solution by permanganometry.
3. Estimation of chromium(VI) in the given solution by standardized FAS.
4. Estimation of copper(II) in given solution by Iodometry.
5. Estimation of total hardness of given water sample.
6. Estimation of alkalinity of a given sample.
7. Conductometric acid-base titrations -Determination of strength of given acids (HCl *Vs* NaOH and CH_3COOH *Vs* NaOH).
8. Conductometric acid-base titrations- Determination of strength of acids in a given mixture of acids (HCl and CH_3COOH *Vs* NaOH)
9. Determination of strength of a given acid by Potentiometry.
10. Determination of concentration of a given $FeSO_4$ using redox titration by Potentiometry.
11. Determination of strength of a given acid by pH metry.
12. Determination of strength of permanganate or copper by Colorimetry.

Learning Resources:

1. G H Jeffery, J Bassett, J Mendham, R C Denney, Vogel's text book of quantitative chemical analysis, Fifth Edition.
2. M S Kaurav, Engineering chemistry with laboratory experiments, PHI learning (P) ltd, New Delhi.
3. Sunita rattan, Experiments in applied chemistry, S K Kataria & Sons (2010)
4. A text book on experiments and calculation Engg. S.S. Dara.

No. of Internal Tests: 01   Max. Marks for Internal Test: 12
Marks for day-to-day laboratory class work   18
Duration of Internal Test: 2 Hours

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500031

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
BASIC ELECTRICAL ENGINEERING FOR CIVIL ENGINEERS LAB

SYLLABUS FOR B.E. I SEMESTER

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: U25ES111EE
Credits :01	CIE Marks:30	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to
1. To provide the practical knowledge on operation of DC, AC machines and circuits.	1. Handle the basic electrical equipments. 2. Find the various electrical parameters in DC and Ac circuits. 2. Find the Efficiency of the DC and AC machines.

List of Experiments:
1. Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor).
2. Verification of KCL and KVL
3. Verification of Superposition Theorem
4. Measurement of Three phase Power
5. Torque Speed Characteristic of dc shunt motor
6. Speed control of dc shunt motor
7. Measurement of electrical energy
8. Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Practical resistors, capacitors and inductors
9. Torque-Slip Characteristic of a three-phase induction motor
10. Improvement of power factor in series RLC circuit.

From the above experiments, each student should perform at least 10 (Ten) experiments

No. of Internal Tests: 01   Max. Marks for Internal Test: 12
Marks for day-to-day laboratory class work   18
Duration of Internal Test: 2 Hours

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MECHANICAL ENGINEERING
WORKSHOP PRACTICE

SYLLABUS FOR B.E. I-SEMESTER

L:T:P(Hrs/week):0:0:2	SEE Marks:50	Course Code:U25ES012ME
Credits :01	CIE Marks:30	Duration of SEE:03Hours

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to: 1. know basic workshop processes, adopt safety practices while working with various tools 2. Identify, select and use various marking, measuring, striking holding, and cutting tools & equipment.	At the end of the course, students will be able to: 1. Construct models related to carpentry, plumbing and welding trades using appropriate tools and techniques. 2. Measure and inspect finished components accurately using suitable measuring instruments. 3. Apply basic electrical and electronics engineering concepts to design and assemble simple electrical circuits, verify their functionality, and perform component soldering with proper safety and technique.

List of the Experiments:

ELECTRICAL & ELECTRONICS:
1. Two lamps in(a)series(b) parallel with 3 pin plug and switches
2. Staircase wiring and Tube light wiring
3. (a) Identification of electronic components
   (b) Soldering practice

CARPENTRY:
1. Half-lap joint
2. Dove-tail joint
3. Bridle joint

PLUMBING:
1. Introduction of tools, joints, couplings and valves etc.
2. Pipe thread cutting and making single joint with coupling and tap connection.
3. Water shower connection with reducer coupling

WELDING
1. Bead formation using arc welding
2. Butt joint & T joint using arc welding
3. Lap joint using gas welding`

ADDITIONAL EXPERIMENTS
1. Electrical & Electronics: LT Distribution with loads (Demo)
2. Carpentry: Wood turning operation (demo)
3. Demonstration of 3D printing of a component
4. Welding: Spot welding (demo)

Learning Resources:
1. Hajra Choudhury S.K., Hajra Choudhury A.K., Nirjar Roy S.K. "Element of Workshop Technology" Vol-I 2008 & Vol-II 2010 Media Promoters & Publishers Pvt. Limited, Mumbail
2. Kalpakjian S. and Steven S. Schmid, "Manufacturing Engineering and Technology" 4th Edition, Pearson Education India Edition, 2002.
3. Gowri P., Hariharan and SurechBabu A., "Manufacturing Technology-I", Pearson Education 2008.
4. P. Kannaiah& K.L. Narayana "Workshop manual" 2nd Ed., Scitech publications (I) Pvt. Ltd., Hyderabad.
5. B.L. Juneja, "Workshop Practice", Cengage Learning India Pvt. Limited, 2014.
6. www.technologystudent.com

No. of Internal Tests: 01   Max. Marks for Internal Test: 12
Marks for day-to-day laboratory class work   18
Duration of Internal Test: 2 Hours

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION (R-25)
BE (CIVIL ENGINEERING) II-SEMESTER ACADEMIC YEAR 2025-2026
(Students Admitted in 2025-26)

Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			
		Hours per Week			Duration in Hrs	Maximum Marks		Credits
		L	T	P/D		SEE	CIE	
THEORY								
U25HS010EH	English Language and Communication	2	-	-	3	60	40	2
U25HS020EH	Human Values and Professional Ethics-II	1	-	-	2	40	30	1
U25HS040EH	Learning to Learn	1	-	-	2	40	30	1
U25BS210CE	Building Materials and Construction	3	-	-	3	60	40	3
U25BS210MA	Differential Equations & Vector Calculus	3	-	-	3	60	40	3
U25BS220PH	Optics, Acoustics and Sensors	2	-	-	3	60	40	2
U25ES220CE	Engineering Drawing – II	1	-	2	3	60	40	2
U25ES230CE	Engineering Mechanics –Dynamics	3	-	-	3	60	40	3
PRACTICALS								
U25HS011EH	English Language and Communication Skills Lab	-	-	2	3	50	30	1
U25BS221PH	Engineering Physics Lab	-	-	2	3	50	30	1
Student should complete one NPTEL (8 weeks) certificate course equivalent to 2 credits by the end of VI-Semester								
Total		**16**	**-**	**6**		**540**	**360**	**19**
Grand Total		**21**				**900**		
Note: The left over hours are to be allotted to Sports/Library / Mentor Interaction/CC/RC/TC/PDC based on the requirement.								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF INSTRUCTION AND EXAMINATION (R-25)
BE (CIVIL ENGINEERING) II-SEMESTER ACADEMIC YEAR 2025-2026
(Students Admitted in 2025-26)

SERVICE COURSES OFFERED BY CIVIL ENGINEERING

Course Code	Name of the Course	Scheme of Instruction Hours per Week			Scheme of Examination			
		L	T	P/D	Duration in Hrs	SEE	CIE	Credits
Theory (Common to EEE & ECE)								
U25ES030CE	Basic Engineering Drawing	1	-	2	3	60	40	2
Theory (Common to CSE & IT)								
U25MC010CE	Environmental Science	1	-	-	2	40	30	-
Theory (Mech.)								
U25ES220CE	Engineering Mechanics -Dynamics	3	-	-	3	60	40	3
U25ES230CE	Engineering Drawing – II	1	-	2	3	60	40	2
Theory (IT)								
U25ES010CE	Basic Engineering Mechanics	2	-	-	3	60	40	2

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
ENGLISH LANGUAGE AND COMMUNICATION

SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week):2:0:0	SEEMarks:60	Course Code: U25HS010EH
Credits:2	CIEMarks:40	DurationofSEE:3Hrs

COURSEOBJECTIVES	**COURSEOUTCOMES**
Objectives of this course are to:	At the end of the course, students will be able to:
1. Build greater confidence and proficiency in oral and written communication. 2. Equip themselves with essential language skills to analyze and articulate their point of views. 3. Develop the ability to engage in reading for reflection and enquiry. 4. Construct grammatically correct and contextually appropriate correct sentences. 5. Learn how project reports are written in their related field of study.	1. Demonstrate effective verbal and non-verbal communication skills and apply emotional intelligence and team-building concepts to real-life scenarios. 2. Listen actively and speak clearly and confidently in academic and professional contexts, including delivering structured presentations. 3. Employ reading techniques and write coherent, well-organized paragraphs, emails, and letters for different purposes and audiences. 4. Apply a broadened vocabulary and correct grammatical structures to construct meaningful and grammatically accurate sentences. 5. Analyse and appreciate literary texts, identifying themes, tone, and stylistic devices, and relate them to personal or societal contexts.

UNIT-I: Effective communication and Interpersonal skills:
1.1 Role and Importance of Communication – Types of Communication (Verbal-non-verbal, formal- informal, oral, written, visual, intrapersonal, interpersonal and extra personal communication); styles, channels and barriers of communication.
1.2 Emotional Intelligence: Self-awareness, Self- regulation, Motivation, Empathy and Social skills
1.3 Johari Window.
1.4 Persuasion techniques.
1.5 Stages of Team Building by Bruce Tuckman; Qualities of a team player/leader.

UNIT-II: 2.0 Listening and Speaking skills:
2.1 Importance of listening-- Types of listening; Note taking.
2.2 Speaking skills: Presentation Skills (on Projects/ Topics related to the branch).

UNIT-III: Reading and Writing skills:
3.1 Reading strategies- SQ3R (Survey, Question, Read, Recite &Review); Types of Comprehension - Global, Factual and Inferential.
3.2 Features of Writing-Principles of writing paragraphs (Coherence, Cohesion& Unity); Use of appropriate linkers/connectives; Focus on cause, effects, comparison, definition, classification problem/ solution,process, argument.
3.3 Email-Etiquette.
3.4 Letter Writing.

UNIT–IV: Vocabulary Building and Grammar:
4.1 Vocabulary Building: Synonyms, Antonyms, One-word substitutes; Words often Confused; Idioms.
4.2 Functional Grammar: Tense and Aspect; Subject-Verb agreement

UNIT-V: Reading for appreciation of literary texts:
5.1 Prose text- Yesterday was Beautiful by Roald Dahl
5.2 Poem-Defeat by Kahlil Gibran

Learning Resources:
1. Technical communication - Principles and Practice (2nd Edition 2014) - Meenakshi Raman and Sangeeta Sharma- Oxford University Press.
2. Abraham Lincolns letter to his son's school headmaster
3. On His Blindness by John Milton
4. Road not taken by Robert Frost
5. Mike Markel - Technical communication
6. The Soldier by Rupert Brooke.

7. Upheavals of Thought: The Intelligence of Emotions-Martha C. Nussbaum
8. Emotional intelligence – Daniel Goleman.
9. Experience & Education-John Dewey
10. Academic writing-Stephen Bailey
11. Biographies for vocabulary and grammar- Salim Ali&Charles Barbage.
12. Bruce Tuckman – Team Building
13. Paul V. Anderson – Technical Communication
14. E.Suresh Kumar, P. Sreehari and J. Savithri - Essential English
    Reading comprehension - Nuttal.J.C - Orient Blackswan
15. SunithaMishra, C. Murali Krishna-Communication Skills for Engineers, Pearson, 2004.
16. M. Ashraf Rizvi. Effective Technical Communication. Tata McGraw Hill, 2005.
17. Allen and Waters. How English Works.
18. Willis Jane., English through English.

Mode of delivery: -Case-studies, Presentations-Power and Poster, Group Discussions, Research based projects, worksheets, Handouts, Lectures, Student presentations, Videos, Audio clips of Speeches Team Tasks etc.

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS),
IBRAHIMBAGH, HYDERABAD-500031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
HUMAN VALUES AND PFOFESSIONAL ETHICS-II
(Common to all branches)

SYLLABUS FOR II- SEMESTERS

L: T: P (Hrs/Week):1:0:0	SEE Marks: 40	Course Code:U25HS020EH
Credits:1	CIE Marks: 30	Duration of SEE: 2 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Create an awareness on the interrelation between Society, Ethics and Human Values 2. Understand how ethical dilemmas apply to real life scenarios 3. Develop ethical human conduct and professional competence 4. Understand the role of good ethical practices and apply it in a project	1. Identify ethical risks in everyday life and in societies that can lead to unethical choices, such as structures that diffuse responsibility or a group that has collectively de-stigmatized unethical behaviour 2. Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, and the objective presentation of data. 3. Assess their own ethical values and the social context of problems and articulate what makes a particular course of action ethically defensible 4. Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research

UNIT-I: Normative Ethics & Societal Ethics: This unit deals with normative ethics, the branch of moral philosophy, or ethics, concerned with criteria of what is morally right and wrong. It includes the formulation of moral rules that have direct implications for what human actions, institutions, and ways of life should be like. This unit also covers societal ethics which is the systematic reflection on the moral dimensions of social structures, systems, issues, and communities.

1.1 Ethical Decision-Making Frameworks
1.2 Emerging Ethical Challenges
1.3 Building a Just Society

UNIT-II: Professional Ethics-Need For Ethical Codes: This unit covers the code of Professional Ethics- it is designed to ensure that students learn the necessary skills that groom them to behave like employees should, one that is socially acceptable and respectful of one another. It establishes the rules for behavior and sends a message to every employee that universal compliance is expected.

2.1 The Importance of Ethical Conduct
2.2 Personal & Professional Accountability
2.3 Maintaining Public Confidence
2.4 Understanding Ethical Codes

UNIT-III: Privacy: This unit covers "Cyber ethics" - the code of responsible behavior on the Internet. Just as we are taught to act responsibly in everyday life with lessons such as "Don't take what doesn't belong to you" and "Do not harm others," we must act responsibly in the cyber world as well.

The basic rule is "Do not do something in cyberspace that you would consider wrong or illegal in everyday life."

3.1 Defining Privacy
3.2 Privacy in the Digital Age
3.3 The Ethics of Surveillance

UNIT-IV: Engineering Ethics for Future Innovators: This unit equips students, the future innovators of tomorrow, with a foundation in engineering ethics. Students will explore the ethical responsibilities engineers hold regarding safety, public well-being, and sustainability. Real-world scenarios and case studies will be examined to understand how ethical considerations impact engineering decisions.

4.1 Safety and Public Welfare
4.2 Sustainability and Environmental Impact
4.3 The Ethics of New Technologies

MODE OF DELIVERY

● Questionnaires ● Quizzes ● Case-studies ● Observations and practice ● Home and classroom assignments	● Discussions ● Skits ● Short Movies/documentaries ● Team tasks and individual tasks ● Research based tasks ● Project

Relevant Websites, CD's and Documentaries
   ● https://plato.stanford.edu/

Learning Resources:
1. Learn.talentsprint.com
2. Moral Machines: Ethical Robotics and Artificial Intelligence by Wendell Wallach
3. Thinking Like an Engineer: Studies in the Ethics of a Profession by Paul Dufour
4. Engineering Ethics: Contemporary and Enduring Debates by Deborah G. Johnson
5. Engineering Ethics: Concepts and Cases by Charles E. Harris, Michael S. Pritchard, Michael J. Rabins, Ray James, and Elaine Englehardt
6. Akash Singh Rathore - On Constitution

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	1	Max. Marks for each Internal Test	:	20
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3	No. of Quizzes	:	2	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests   : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
LEARNING TO LEARN
SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week):1:0:0	SEEMarks:40	Course Code: U25HS040EH
Credits:1	CIEMarks:30	Duration of SEE:2Hrs

COURSEOBJECTIVES	**COURSEOUTCOMES**
Objectives of this course are to:	At the end of the course, students will be able to:
1. Understand the importance of a growth mindset and personal learning styles. 2. Learn techniques to improve memory retention and focus for effective learning. 3. Develop practical time management skills to prioritize tasks effectively. 4. Help students understand questions, structure answers effectively, and manage time for improved exam performance.	1. Students will be able to adopt a growth mindset and customize learning strategies based on their strengths. 2. Students will apply mnemonic devices, active recall, and focus strategies to enhance their learning process. 3. Students will implement time-blocking and prioritization techniques for better productivity. 4. Students will apply strategies to interpret questions and write clear, effective answers within time limits.

Overview: In an era shaped by rapid change and evolving technologies, the ability to learn continuously is a core skill for personal and professional success. This course is designed to help engineering students become self-directed, adaptable learners. By exploring mindset, memory techniques, focus strategies, time management, and reflection, students will develop learning habits that support lifelong growth and workplace readiness.

UNIT -I: Foundations of Learning: Builds a strong base for lifelong learning through mindset, self-awareness, and personal learning styles.
  1.1 Growth Mindset
  1.2 Understanding Learning Styles

1.3 Overcoming Procrastination

Learning Outcomes:
● Cultivate a growth mindset to embrace challenges and persist in learning
● Identify personal learning preferences and adapt strategies accordingly
● Recognize and overcome common learning barriers like procrastination

UNIT-II: Memory and Focus: Equips students with practical strategies to improve attention and information retention.
2.1 Techniques for Focus and Attention
2.2 Spaced Repetition and Active Recall
2.3 Mind Mapping for Retention

Learning Outcomes:
● Practice focused learning using tools like Pomodoro and distraction management
● Enhance memory with scientifically supported methods like spaced repetition and recall
● Use visual techniques such as mind maps to organize and retain complex content

UNIT-III: Managing Time Effectively: Enables students to manage academic and personal responsibilities through smart scheduling and prioritization.
3.1 Prioritization (Eisenhower Matrix)
3.2 Time Management Tools
3.3 Balancing Academics and Personal Goals

Learning Outcomes:
● Prioritize tasks using structured models for better academic planning
● Use digital or physical tools to track goals, deadlines, and productivity
● Design a sustainable routine that aligns academic success with well-being

UNIT-IV: Strategic Exam Skills Decoded: Focuses on building strategic approaches to tackle exams effectively, with emphasis on comprehension, answer structuring, and time-bound performance.
4.1 Understanding the Question
4.2 Structuring the Answer
4.3 Customizing Answers for Impact

Learning Outcomes:

- Interpret exam questions accurately and identify the expected response type and depth.
- Construct well-structured, relevant answers tailored to the marks and keywords in the question.
- Recognize and eliminate common answer-writing errors like digression and unnecessary detail.

Learning Resources:

learn.talentsprint.com

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	1	Max. Marks for each Internal Tests	:	20
2	No. of Assignments	:	1	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	1	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests   :   90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF MATHEMATICS
DIFFERENTIAL EQUATIONS & VECTOR CALCULUS
(Common to Civil, EEE, ECE, Mechanical Branches)

SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week):3:1:0	SEEMarks:60	Course Code: U25ES210MA
Credits:3	CIEMarks:40	Duration of SEE:3Hrs

COURSEOBJECTIVES	COURSEOUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Understand the fundamental concepts and solution of first-order Differential Equations, as well as their applications in modeling real-world phenomena. 2. Develop the ability to solve homogeneous and non-homogeneous Linear differential equations with constant coefficients, and their applications to LCR circuits. 3. Study the concepts of vector differentiation, Directional derivative, Divergence and Curl of a vector point function. 4. Learn the concepts of evaluation of double integrals and changing the order of integration. 5. Understand the concepts Improper integrals Beta, Gamma functions and their properties.	1. Solve various types of first-order Differential Equations, model and analyze physical systems such as LR circuit and find orthogonal trajectories of Cartesian curves. 2. Solve homogeneous and non-homogeneous Linear differential equations with constant coefficients, including those arising in LCR circuits. 3. Find the gradient of a scalar point function, divergence and curl of vector field and its applications. 4. Evaluate the double integrals and also evaluate the double integrals by changing the order of integration and by change of variables. 5. Evaluate Improper integrals using Beta, Gamma functions.

UNIT–I:Ordinary Differential Equations of First Order: Exact differential equations - Integrating factors - Clairaut's equation - Applications: Orthogonal trajectories (Cartesian families) - LR Circuit.

UNIT-II: Higher Order Linear Differential Equations: Solutions of Homogeneous and Non-Homogeneous linear equations of the form f(D) y = r(x) with constant coefficients [Where $r(x) = e^{ax}$, $\sin(ax + b)$ (or) $\cos(ax + b)$, x^k, $e^{ax}V(x)$] - Method of Variation of Parameters- LCR circuits.

UNIT–III: Vector Calculus: Scalar and Vector point function and their derivatives - Level Surface - Gradient of a scalar point function - Normal to a level surface - Directional Derivative – Divergence and Curl of a Vector Field – Solenoidal and Irrotational vectors - Conservative vector field.

UNIT–IV: Double Integrals: Double integrals (Cartesian) - Change of order of integration (Cartesian Coordinates) - Change of the Variables (Cartesian to Polar Coordinates in two dimensions).

UNIT –V: Special Functions: Definition of Improper Integrals- Beta function - Gamma function - Relations between Beta & Gamma function - Properties of Beta and Gamma functions.

Learning Resources:
1. Advanced Engineering Mathematics 3rd Edition, R.K.Jain & S.R.K.Iyengar, Narosa Publishing House.
2. Higher Engineering Mathematics 40thEdition Dr. B.S Grewal, Khanna Publishers.
3. A Text book of Engineering Mathematics, N.P. Bali& Manish Goyal, Laxmi Publications.
4. Advanced Engineering Mathematics, by Wylie & Barrett, Tata Mc Graw Hill, New Delhi.
5. Advanced Engineering Mathematics, 8th Edition by Erwin Kreyszig, John Wiley & Sons, Inc.
6. Complex Variables and applications, J.W.Brown and R.V.Churchill, 7th Edition, Tata Mc Graw Hill,2004.
7. https://onlinecourses.swayam2.ac.in/cec24_ma09/preview
8. https://onlinecourses.nptel.ac.in/noc24_ma03/preview

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF PHYSICS
OPTICS, ACOUSTICS & SENSORS (OAS)
(Common to Civil & Mechanical Branches)
SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week):2:0:0	SEEMarks:60	CourseCode:U25BS220PH
Credits:2	CIEMarks:40	DurationofSEE:3Hrs

COURSEOBJECTIVES	**COURSEOUTCOMES**
Objectives of this course are to:	At the end of the course, students will be able to:
1. To summarize principles of interference, diffraction and polarization of light. 2. To comprehend lasing action and state application of lasers 3. To describe characteristics of acoustics quieting effects required for a hall. 4. To interpret the advantages of using sensors in civil engineering and learn fundamentals of thermodynamics	1. To articulate principles of wave optics and use them for various measurements. 2. To compare different types of lasers and identify their utilization in civil engineering sector 3. To interpret acoustics of a hall and suggest good building acoustics 4. To list out various sensors to monitor health of structures and suggest remedies.

UNIT-I:Wave Optics- Interference: conditions for sustained interference, interference due to thin parallel film, Newton's rings, applications of interference.

Diffraction: Phenomenon of diffraction of light, types of diffraction, Fraunhofer diffraction due to a single slit, diffraction due to N- slits (plane transmission grating), applications of diffraction.

Polarization: Polarization of light, types of polarized light, double refraction, construction and working of Nicol's Prism, Polarizer and analyzer, Quarter wave and Half wave plates. Relevant applications.

UNIT-II: Lasers And Optical Fibres-Lasers: stimulated emission, properties of laser light, population inversion, meta-stable states, pumping mechanisms, components of laser, construction and working of He-Ne laser, advantages and applications oflasers in engineering.

Optical Fibers: introduction to optical fibers, propagation of light in optical fiber, numerical aperture, acceptance angle, types of optical fibers, signal losses in optical fibers: Attenuation-absorption, Scattering, bending, alignment losses, Signal distortion. Block diagram of optical communication system, advantages and application of optical fibers.

UNIT-III:Acoustics-*Architectural Acoustics*: classification of sound: musical sound and noise, Characteristics of musical sound-pitch, loudness, timbre, sound intensity, sound pressure levels, reverberation time, absorption coefficient, Sabine's formula, sound absorbent materials, Building acoustic requirements, conditions for acoustic quieting: effects and remedies. Sound proofing applications in Civil Engineering.

Ultrasonics:propertiesofultrasonics,typesofultrasonicwaves,productionofultra sonics by piezoelectric and magnetostriction methods, detection of ultrasonics by piezoelectric, thermal detector, applications of Ultrasonics: SONAR, Ultrasonic non-destructive testing applications in civil engineering.

UNIT-IV:Sensors For Structural Health Monitoring & Introduction To Thermodynamics
Introduction to Structural Health Monitoring (SHM): Types of Sensors in structural health monitoring: Strain Gauge (load cells),Optical Fiber Sensors, Accelerometer,Tiltmeter, Temperature Sensors: Thermocouple and Thermistor.
Introduction to Thermodynamics: Thermodynamic equilibrium, zeroth law, first law and second law of thermodynamics, work done in isothermal and adiabatic process, Carnot cycle (Qualitative).

Learning Resources:
1. M.N. Avadhanulu and P.G. Kshirsagar and TVS Arun Murthy, A Textbook Engineering Physics, 11th edition, S. Chand,2019.
2. John G. Webster and HalitEren, Measurement, instrumentation, and Sensor's handbook: Spatial, Mechanical, Thermal and Radiation Measurement, CRC press, 2014.
3. D. Patranabis, Sensors and Transducers,2nd edition, PHI Learning Pvt Ltd.,2015
4. P.K Nag, Engineering Thermodynamics, 6th edition -2017.

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
	Duration of Internal Tests		:	90 Minutes		

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENTOFCIVILENGINEERING
BUILDING MATERIALS AND CONSTRUCTION
SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week):3:0:0	SEE Marks:60	Course Code:U25BS210CE
Credits:3	CIE Marks:40	Duration of SEE:3Hrs

COURSEOBJECTIVES	**COURSEOUTCOMES**
Objectives of this course are to:	At the end of the course, students will be able to:
1. Expose students to the concepts of building planning and various aspects of green buildings. 2. Acquire basic knowledge on conventional building materials and emerging building materials 3. Study construction practices like scaffolding, form work and brick bonds.	1. Apply the principles of planning and bylaws for planning of building 2. Explain the characteristics of bricks, timber and cement. 3. Describe properties of aggregate, mortar and illustrate the application of emerging building materials. 4. Review of construction practices like scaffolding, form work, brick bonds and understand sustainability and green building concepts.

UNIT-I:BuildingPlanning: Typesofbuildings,Basicbuildingelements,site selection for buildings, Principles of planning, Relevant Municipal building bylaws- National Building Code (NBC), orientation of buildings.

UNIT-II: Stones: Uses of stones as building materials, characteristics of good building stones.
Bricks: Manufacturing of bricks, characteristics of good building bricks, classification of bricks.
Timber: Timber as a building material and its uses, defects in timber, seasoning and its importance, wood based products used in building construction.

Cement: Chemical composition of cement, manufacturingprocess, specifications for Ordinary Portland Cement.

UNIT-III: Fine Aggregate: Characteristics of sand and its classifications, bulking of sand, quarry sand.
Coarse Aggregate: Characteristics of coarse aggregates for preparation of concrete.
Cement Mortar: Proportionsofcementmortaranduses.
Emerging Building Materials: Eco friendly and sustainable building materials-Fly ash, GGBS, Bamboo, Recycled aggregates, Light Weight building blocks.

UNIT-IV: Construction practices: Scaffolding and Form work, English and Flemish Brick Bonds–Types and purposes, Construction Equipment-Types, applications.
Introduction to Green Buildings: Definition of green buildings and sustainable development, typical features of green buildings, benefits of green buildings towards sustainable development, Green building rating systems – GRIHA, IGBC and LEED, rainwater harvesting.

LearningResources:
1. KumaraSwamy N.,Kameswara RaoA.,Building Planning and Drawing, Charotar, Publications, 2019.
2. AroraS.P.and Bindra S.P.,A Text Book of Building Construction, Dhanpat Rai & Sons Publications, 2019.
3. SushilKumar, Building Construction, Standard Publishers, 2020.
4. VargheseP.C.,Building Materials, PHI LearningPvt.Ltd., Delhi,2015.
5. National Building Code of India, 2016.
6. IGBC Green Homes Rating System,Version3.0.,A bridged reference guide, 2019, Indian Green Building Council Publishers.
7. GRIHA version 2019, GRIHA rating system, Green Rating for Integrated Habitat Assessment.
8. Alternative building materials and technologies by K.S.Jagadish, B.V. Venkatarama Reddy and K.S. NanjundaRao; 2017, Newage International Pvt Ltd.

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
ENGINEERING DRAWING-II
(Common to Civil & Mechanical Engineering)

SYLLABUS FOR B.E. II SEMESTER

| L:T:P (Hrs./week): 1:0:2 | SEE Marks: 60 | Course Code: U25ES220CE |
| Credits: 2 | CIE Marks: 40 | Duration of SEE: 3Hrs |

Course Objectives	Course Outcomes
Objectives of this course are to:	At the end of the course, students will be able to:
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 (axis perpendicular to HP and VP 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 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.

Learning Resources:
1. Bhatt N.D. "Elementary Engineering Drawing",CharotarPublishers,54th edition,2023.
2. Thomas E French, Charles J Vierck, Robert J. Foster, "Engineering Drawing and Graphic Technology",McGraw Hill Education, 2012.
3. Gill P.S."Engineering Drawing: Geometrical Drawing", S K Kataria &sons, 2012.
4. Venugopal.K "Engineering Drawing and Graphics Plus Autocad", New Age International (P)Ltd., New Delhi,2010.
5. Siddiquee A.N" Engineering Drawing with a Primer on Autocad", Prentice hall of India Ltd., New Delhi,2004.
6. Basanth Agrawal, Agrawal C.M"Engineering Graphics "First Edition,Tata Mc Graw Hill,2013
7. BVR Gupta, M Raja Roy, "Engineering Drawing with AutoCAD", IKIntPvt Ltd, 2009.
8. NPTEL Course (www.nptel.ac.in)
9. Virtual labs (www.vlab.co.in)

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
ENGINEERING MECHANICS-DYNAMICS
(Common to Civil & Mechanical Engineering)
SYLLABUS FOR B.E. II-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks: 60	Course Code: U25ES230CE
Credits: 3	CIE Marks: 40	Duration of SEE: 3Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Understand the concepts of dynamics and its principles. 2. Explain kinetics and kinematics of particles, projectiles, curvilinear motion, fixed axis rotation of rigid bodies. 3. Impart the concepts of work-energy method and its applications to translation, rotation. 4. Explain the concepts of virtual work method for equilibrium for particle and rigid bodies along with mechanical efficiency. 5. Impart the concept of impulse momentum relation	1. Distinguish between statics and dynamics and differentiate between kinematics and kinetics. 2. Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion. 3. Solve problems using work energy equations for translation, fixed axis rotation. 4. Solve the problems using virtual work method and able to know its applications and limitations. 5. Solve problems using impulse momentum equation

UNIT–I: Kinematics: Rectilinear motion, Curvilinear motion, Projectile motion, Velocity and acceleration, Types of rigid body motion-Fixed axis rotation.

UNIT-II: Kinetics: Analysis as a particle, Analysis as a rigid body in translation, Fixed axis rotation.

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

UNIT-IV: Virtual Work Method: Principles of Virtual work, Applications and limitations, equilibrium for particle and rigid bodies along with mechanical efficiency.

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

Learning Resources:
1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2023.
2. Timoshenko S.P and Young, "Engineering Mechanics (SI Units)", McGraw Hill, 5th edition.2013.
3. Andrew Pytel, JaanKiusalaas, "Engineering Mechanics", Cengage Learning, 4th edition, 2016.
4. Beer F.P & Johnston E.R Jr. "Vector Mechanics for Engineers", TMH, 12th edition, 2019.
5. Hibbeler R.C Sharma D P & Ashok Gupta, "Engineering Mechanics", Pearson Education, 2012.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.
7. Basudeb Bhattacharyya, "Engineering Mechanics", Oxford University Press,2nd edition, 2014.
8. Meriam. J. L., "Engineering Mechanics", Volume-II Dynamics, John Wiley & Sons, 4th edition, 2008.
9. NPTEL Course (www.nptel.ac.in)
10. Virtual labs (www.vlab.co.in)

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5

Duration of Internal Tests   : 90 Minutes

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
BASIC ENGINEERING DRAWING
(Common to EEE & ECE)

REVISED SYLLABUS FOR B.E. II-SEMESTER

L:T:P(Hrs./week):1:0:2	SEEMarks: 60	CourseCode:U25ES030CE
Credits:2	CIEMarks: 40	DurationofSEE:3Hrs

COURSEOBJECTIVES	COURSEOUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Impart skills in using drawing instruments to convey exact and complete information of the object. 2. Construct conic sections and regular polygons. 3. Construct the orthographic projections of points, lines, planes and solids.	1. Understand the fundamentals of drawing, Draw polygons and Conics. 2. Draw the orthographic projections of points and straight lines. 3. Draw the orthographic projections of planes inclined to both reference planes. 4. Draw the orthographic projections of solids inclined to one reference plane.

UNIT-I: Introduction to Engineering Drawing: Necessity of Engineering Drawing for engineers, Use of Drawing Instruments, Types of Lines, Lettering practice, Dimensioning and its methods, Conic sections by eccentricity method, Regular polygons given the length of side.

UNIT-II: Orthographic Projections: Principles of orthographic projections, conventions, projections of points placed in different quadrants.

Projections of straight lines inclined to one and two reference planes placed infirst quadrant – Determination of final projections given true length and inclinations; Determination of true length and inclinations given projections ($\theta+\phi<90°$Only)

UNIT-III: Projections of Planes: Projections of perpendicular planes, oblique planes- cases of an element of plane in HP or VP only.

UNIT-IV: Projections of Regular Solids: Projections of prism, cylinder, pyramid and cone in simple positions and axis inclined to one reference plane.

Learning Resource:
1. Bhatt N.D. "Elementary Engineering Drawing", Charotar Publishers,54th Edition, 2023.
2. Basanth Agrawal, Agrawal C.M " Engineering Drawing" Second Edition, Tata McGraw Hill,2019
3. Thomas E French, Charles J Vierck, Robert J. Foster,"Engineering Drawing and Graphic Technology",Mc Graw Hill Education, 1993.
4. GillP.S."Engineering Drawing: Geometrical Drawing",S K Kataria & sons,13th Edition, 2021.
5. Venugopal.K"Engineering Drawing and Graphics Plus Autocad",New Age International (P) Ltd., New Delhi,2011.
6. Siddiquee A.N" Engineering Drawing with a Primer on Autocad",Prentice hall of India Ltd., New Delhi,2004.
7. BVR Gupta, M RajaRoy, "Engineering Drawing with AutoCad",IK Int Pvt Ltd,2020.
8. NPTELCourse(www.nptel.ac.in)
9. Virtuallabs(www.vlab.co.in)

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
ENVIRONMENTAL SCIENCE
(Common to CSE, CSE AIML & IT)

SYLLABUS FOR B.E. II SEMESTER

L : T : P (Hrs./week): 1 : 0 : 0	SEE Marks:40	Course Code: U25MC010CE
Credits : - - -	CIE Marks:30	Duration of SEE: - Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
In this subject the students will	*Upon the completion of this course students will be able to*
1. Explain the scope and fundamental principles of environmental science, including key concepts such as ecosystem structure, function, and biodiversity.	1. Define and illustrate core environmental science concepts—ecosystem structure, energy flow and levels of biodiversity.
2. 2.Characterize genetic, species, and ecosystem diversity, and articulate the various values of biodiversity.	2. Apply key legislative frameworks to real-world scenarios involving air, water, and land resource management.
3. 3.Analyze the causes, effects, and control measures for air, water, and land pollution—and apply major regulatory frameworks	3. Analyze the environmental fate and impacts of agricultural inputs on food systems, recommending sustainable practices.
4. 4.Evaluate the environmental impacts of food-related practices and propose sustainable, health-oriented alternatives.	4. Compare and evaluate major renewable energy technologies in terms of availability, efficiency, cost, and environmental footprint.
5. 5.Assess renewable energy resources and design integrated, engineering-based solutions that meet environmental, legal, and societal requirements.	5. 5. Integrate scientific data, legal requirements, and engineering principles to design a mini-project addressing a local environmental challenge.

UNIT-I: Environmental Science Fundamentals and Ecosystem Diversity: Definition and importance of Environmental Science, Ecosystem: classification, structure, and function, Diversity: genetic, species, and ecosystem level. Biodiversity values: productive, consumptive, ethical, social, cultural, optional, Biodiversity Acts and Laws: The Biological Diversity Act-2002, Environment (Protection) Act- 1986.

UNIT-II: Air, Water, and Land Resources: Air Pollution: The Air (Prevention and Control of Pollution) Act- 1981, Water Resource: Freshwater availability on Earth, Drinking water quality standards | IS 10500:1991, Water pollution: effects and control measures, Case studies. Land Resource: Desertification, Land degradation: causes, effects, and control, Case studies

UNIT-III: Food Resources and Environmental Issues: Food Resource: Fertilizer and pesticide problems, Eutrophication, Biomagnification, Balanced diet, Effects of processed food, Case studies

UNIT-IV: Renewable Energy Resources and current relevant issues: Importance of renewable energy sources: Solar, Wind, Tidal, Ocean thermal, Geothermal, Biomass, Biofuel, Biogas, Hydrogen energy, Case studies, Climate change adaptation Sustainability, life cycle assessment, use of AI in disaster risk reduction.

Learning Resources:
1. Deswal S. and Deswal A., A Basic Course on Environmental studies, Dhanpat Rai & Co Pvt. Ltd. 2013.
2. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2006.
3. Suresh K. Dhameja, Environmental Studies, S.K. Kataria & Sons, 2010.
4. De A.K., Environmental Chemistry, New Age International, 2003.
5. Odum E.P., Fundamentals of Ecology, W.B. Sunders Co., USA, 2004.
6. Sharma V.K., Disaster Management, National Centre for Disaster Management, IIPE, Delhi, 2013.
7. Rajagopalan R., Environmental Studies, Second Edition, Oxford University Press, 2013.

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	1	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	2	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	2	Max. Marks for each Quiz Test	:	5
Duration of Internal Tests		:	90 Minutes			

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING
BASIC ENGINEERING MECHANICS
(IT)

SYLLABUS FOR B.E. II SEMESTER

L : T : P(Hrs./week):2 : 0 : 0	SEE Marks:60	Course Code: U25ES010CE
Credits: 2	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. Explain the resolution of a system of forces (coplanar, 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 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.

UNIT-I: Force Systems: Rectangular components, moment, couple and resultant of two dimensional force systems.

UNIT-II: Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of two dimensional force systems.

UNIT-III: Determinate Trusses: Analysis of plane trusses like Warren truss, 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 Wedge friction.

UNIT-V: Centroid and Moment of Inertia: Centroids of lines, areas, Moment of inertia of areas for regular bodies (T, I & C-Sections)

Learning Resources:
1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2023.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., JaanKiusalaas., "Engineering Mechanics", 4th edition, Cengage Learning, 2015.
4. Beer F.P & Johnston E.R Jr. "VectorMechanics for Engineers", TMH, 2019.
5. Hibbeler R.C, "Engineering Mechanics", 4th edition, Pearson Education, 2017.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", 4th Edition, Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2014, 2nd Edition
8. Meriam. J. L. and Kraige L.G., "Engineering Mechanics", Volume-I Statics, John Wiley & Sons, 2017.
9. NPTEL Course (www.nptel.ac.in)
10. Virtual labs (www.vlab.co.in)

The break-up of CIE: Internal Tests   + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Test	:	30
2	No. of Assignments	:	3	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	3	Max. Marks for each Quiz Test	:	5
	Duration of Internal Tests	:		90 Minutes		

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
ENGLISH LANGUAGE AND COMMUNICATION LAB

SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week):2:0:0	SEEMarks:30	Course Code: U25HS011EH
Credits:1	CIEMarks:30	DurationofSEE:2Hrs

COURSEOBJECTIVES	**COURSEOUTCOMES**
Objectives of this course are to:	At the end of the course, students will be able to:
1. Understand the fundamentals of English phonetics, including sound classification and pronunciation of commonly mispronounced and foreign words. 2. Enhance listening comprehension and ear training through stress, intonation, and exposure to historical speeches and pronunciation patterns. 3. Develop effective public speaking and presentation skills by analysing model speeches and practicing structured delivery techniques. 4. Build collaborative communication abilities through group discussions, focusing on initiation, continuation, and closure strategies. 5. Strengthen reading comprehension and analytical skills, including paraphrasing and summarizing, using diverse reading strategies and text types.	1. Accurately identify and pronounce English consonant and vowel sounds, including words with silent letters and foreign-origin terms used in English. They will also demonstrate improved listening and speech recognition skills through analysis of famous speeches and application of intonation and stress patterns. 2. Deliver structured public speeches and group presentations confidently, adhering to best practices for content and visual aid usage. They will engage effectively in group discussions, displaying clarity of thought, respect for others' opinions, and logical progression. 3. Apply advanced reading techniques (e.g., SQ3R, scanning, skimming) to comprehend, paraphrase, and summarize content from diverse sources including technical and journalistic texts.

1.0 PHONETICS LAB-TOPICS:
1.1 **Introduction to English Phonetics:**
Classification of consonants and vowel sounds and related symbols. Pronunciation of commonly mispronounced words. Pronunciation of Foreign words in English.

1.2 **Aspects of language learning and ear training activities-** Word stress and intonation, Pronunciation of silent letters and Foreign words used in English Longman Dictionary of contemporary English-6th Edition, 2020.Listening to famous speeches from history followed by while listening and post listening exercises.

2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS
2.1 **Public speaking:**
Dos and don'ts of public speaking. Listening and analysing speeches of great personalities in history, TED talks, Documentaries and Movies.

2.2 **Presentation Skills:**
Dos and Don'ts of power point presentations, group presentations (branch specific topics)

2.3 **Group discussion:**
Objectives of GD, Types of GDs; Initiating, Continuing, and concluding a GD.

3.0 READING SKILLS LAB –TOPICS
3.1 Sub-skills of reading - SQ3R – skimming, scanning, extensive and intensive reading.
3.2 Teaching different types of texts for comprehension-short stories and technical articles.
3.3 Newspaper reading and paraphrasing/summarising.
3.4 Interview skills: For Practicalexaminations and general HR interviews.

Learning Resources:
1. Speak Well:JayshreeMohanraj, KandulaNirupa Rani and Indira Babbellapati - Orient Black Swan
2. Longman Dictionary of Contemporary English – 6th Edition, 2020.(The students will be given the PDF format)
3. Balasubramanian: A textbook of English phonetics for Indian students, Macmillan, 2008.

4. PriyadarshiniPatnaik: Group discussion and interviews, Cambridge University Press India private limited 2011.
5. Daniel Jones: Cambridge English Pronouncing Dictionary - A Definitive guide to contemporary English Pronunciation.
6. Reading Cards (Eng400): Orient Black Swan. Reading Squabble - Hadfield.

No. of Internal Tests: 02   Max. Marks for Internal Test: 12
Marks for day-to-day laboratory class work   18
Duration of Internal Test: 2 Hours

VASAVI COLLEGE OF ENGINEERING (Autonomous)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF PHYSICS
ENGINEERING PHYSICS LAB
(Common to Civil & Mechanical Branches)

SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week):2:0:0	SEEMarks:60	CourseCode:U25BS221PH
Credits:1	CIEMarks:40	DurationofSEE:3Hrs

COURSEOBJECTIVES	COURSEOUTCOMES
Objectives of this course are to:	At the end of the course, students will be able to:
1. To study and discuss the characteristics of a given device 2. To identify probable errors and take in the readings and known possible precautions 3. To compare the experimental and theoretical values and draw possible conclusions. 4. To interpret the results from the graphs drawn using experimental values. 5. To write the record independently with appropriate results.	1. to conduct experiment independently and in team to record the measurements 2. To outline the precautions required to be taken in each experiment 3. To compare the experimental results with standard values and estimate error percentage 4. To draw graphs and interpret the results with respect theoretical results. 5. To effectively write summary of the experiment and draw appropriate conclusions

1. Determination of moment of inertia of a Fly Wheel
2. Computation of rigidity modulus of material of a wire using Torsional Pendulum
3. Estimation of frequency of electrically maintained Tuning fork-Melde'sexperiment.
4. Determination of radius of gyration and acceleration due to gravity using Compound Pendulum.
5. Assessment of velocity of ultrasonic waves in liquids
6. Calculation of wavelength of laser light & Estimation of distance by laser light source
7. Measurement of radius of curvature of a Plano-convex lens by formingNewton's Rings.

8. Determination of wavelengths of mercury vapour lamp- diffraction grating
9. Calculation of numerical aperture, acceptance angle and power loss due to bending of an optical fibre.
10. Study of I-V characteristics of P-N Junction diode.
11. Gyroscope- study of gyroscopiceffects.

Learning Resources:

No. of Internal Tests: 02 Max. Marks for Internal Test: 12
Marks for day-to-day laboratory class work 18
Duration of Internal Test: 2 Hours