

With effect from the Academic Year 2021-22 (R-21)

**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 2021–2022
(For the students admitted in 2021-22)**



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

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.
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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.
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- 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.
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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.
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VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

SCHEME OF INSTRUCTION AND EXAMINATION (R-21)
B.E. – (CIVIL ENGINEERING) I-SEMESTER ACADEMIC YEAR 2021 - 2022
(Students Admitted in 2021-22)

B.E (Civil) I Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY								
U21HS020EH	Human Values and Professional Ethics-I	1	-	-	2	40	30	1
U21BS110MA	Calculus	3	-	-	3	60	40	3
U21BS120PH	Applied Physics	3	-	-	3	60	40	3
U21ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3
U21ES120CE	Engineering Drawing – I	1	-	2	3	60	40	2
U21ES110EE	Basic Electrical Engineering for Civil Engineers	2	-	-	3	60	40	2
U21MC010CE	Environmental Science	2	-	-	3	60	40	-
PRACTICALS								
U21BS011PH	Applied Physics Lab	-	-	2	3	50	30	1
U21ES111ME	Engineering Workshop-I	-	-	2	3	50	30	1
U21ES111EE	Basic Electrical Engineering Lab for Civil Engineers	-	-	2	3	50	30	1
Total		15	-	8	-	550	360	17
Grand Total		23				910		
<i>Note: The left over hours are to be allotted to Sports / Library / Mentor Interaction /CC / RC / TC / PDC based on the requirement.</i>								

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

SCHEME OF INSTRUCTION AND EXAMINATION (R-21)
B.E. – (CIVIL ENGINEERING) I-SEMESTER ACADEMIC YEAR 2021 - 2022
(Students Admitted in 2021-22)

INTERDISCIPLINARY COURSES OFFERED BY CIVIL ENGINEERING

B.E (Civil) I Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY (Common to CSE & IT)								
U21ES030CE	Basic Engineering Drawing	1	-	2	3	60	40	2
THEORY (Common to EEE & ECE)								
U21MC010CE	Environmental Science	2	-	-	3	60	40	-
THEORY (Common to CSE, ECE, EEE, & Mech.)								
U21ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3
THEORY (Mech.)								
U21ES120CE	Engineering Drawing – I	1	-	2	3	60	40	2

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

**DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
HUMAN VALUES AND PROFESSIONAL ETHICS-1
(COMMON FOR ALL BRANCHES)**

L: T: P (Hrs/Week): 1 : 0 : 0	SEE Marks: 40	Course Code: U21HS020EH
Credits: 1	CIE Marks: 30	Duration of SEE: Hours: 02

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to: -	On completion of this course the student 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-I: Harmony With Self and Family

This unit will cover the basic Human Aspirations: Philosophy, purpose & objective of Life 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-efficacy, 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.

UNIT-II: PROFESSIONAL VALUES AND BEHAVIOUR

This unit covers the following components

- a) **At the level of individual:** as socially and ecologically responsible engineers and technologists.
- b) **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.

UNIT-III: Social Values: This unit covers inputs on values of service, social justice, dignity and worth of the person, importance of human relationships, integrity, and competence.

UNIT-IV: Spiritual Values: This unit covers on developing individual practice and 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.

MODE of DELIVERY

<ul style="list-style-type: none">● Questionnaires● Quizzes● Case-studies● Observations and practice● Home and classroom assignments	<ul style="list-style-type: none">● Discussions● Skits● Short Movies/documentaries● Team tasks and individual tasks● Research based tasks● Viva
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Relevant Websites, CD's and Documentaries

- <https://plato.stanford.edu/>

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	:	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 MATHEMATICS

CALCULUS

(Common to Civil, EEE, ECE, & Mechanical Engineering)

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):3 : 0 : 0	SEE Marks:60	Course Code: U21BS110MA
Credits: 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>The course will enable the students to:</i>	<i>At the end of the course students should be able to:</i>
<ol style="list-style-type: none"> Understand The concepts of curvature, radius of curvature, evolutes and to expand functions using Taylor's series. Acquire knowledge of partial derivatives, and expand functions using Taylor's series functions of two real variables and, maxima- minima. Study the concepts of vector differentiation, Gradient, Divergence and Curl. Learn how to evaluate double and triple integrals, using change of order of integration and apply vector integration to transformation theorems Identify convergence of infinite series using various tests. 	<ol style="list-style-type: none"> Compute radius of curvature, evolute of a given curve and also to expand given function using Taylor's series. Expand the given function in terms of Taylor's series and find Maxima and minima of functions of several variables also using Lagrange's method of multipliers. Use gradient to evaluate directional derivatives and conservative vector field. Apply concepts of multiple integrals to evaluate area and volume and vector integration to transformation. Apply an appropriate test to check the nature of the infinite series.

UNIT- I: DIFFERENTIAL CALCULUS: Taylor's Series – Maclaurin's Series- Curvature- Radius of Curvature – Centre of Curvature –Evolutes. (Cartesian and Parametric co-ordinates)

UNIT-II : FUNCTIONS OF SEVERAL REAL BVARIABLES: Limits- Continuity -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-III : VECTOR DIFFERENTIAL CALCULUS: Scalar and Vector point functions -Vector Differentiation-Level Surfaces-Gradient of a scalar point function- Normal to a level surface-Directional Derivative – Divergence and Curl of a Vector field-Conservative vector field.

UNIT-IV : MULTIPLE INTEGRALS: Double and Triple integrals (Cartesian) - Change of order of integration (Cartesian Coordinates).

VECTOR INTEGRATION: Line, Surface and Volume integrals- Green's Theorem – Gauss Divergence theorem - Stokes's Theorem. (all theorems without proof). Solenoidal and Irrotational vectors.

UNIT-V: INFINITE SERIES: Definition of Sequences- Series – Convergence and Divergence- Series of positive terms-Geometric series- p-series test - Comparison tests - D’Alemberts Ratio Test – Cauchy’s root test - Alternating Series – Leibnitz test – Absolute and Conditional 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 40th 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. <http://mathworld.wolfram.com/topics>
7. <http://www.nptel.ac.in/course.php>
8. <https://www.coursera.org/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 PHYSICS
APPLIED PHYSICS
 (Common to Civil Engineering)

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):3 : 0 : 0	SEE Marks:60	Course Code: U21BS120PH
Credits: 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>The course will enable the students to:</i>	<i>At the end of the course students should be able to:</i>
1. Explain mathematical formulations of waves and oscillations	1. Interpret behavior of mechanical oscillators with and without damping effects
2. State principles of interference, diffraction and polarization of light	2. Outline the principles of wave optics and their applications
3. Comprehend lasing action and relate use of lasers in optical fiber communications.	3. Compare different types of lasers and use of light sources in optical fiber communication
4. Describe good acoustics required for a hall	4. Explain production of ultrasonics and summarize good building acoustics
5. Interpret the advantages of using sensors in civil engineering	5. List various sensors used in structural health monitoring

UNIT-I: Oscillations : Definition of SHM, equation of motion and its solution to simple harmonic oscillator, energy of simple harmonic oscillator, equation of motion and its solution to damped harmonic oscillator, logarithmic decrement, energy of damped oscillator, relaxation time, equation of motion and its solution to forced harmonic oscillator, Resonance, Q-factor, sharpness, electromechanical analogy.

UNIT-II: Wave Optics : Interference: superposition principle, coherence, conditions for interference, interference due to thin parallel film, Newton's rings, and its applications.

Diffraction: Phenomenon of diffraction of light, differences between Fresnel and Fraunhofer diffraction, Fraunhofer diffraction due to a single slit- diffraction due to N- slits (plane transmission grating)-Rayleigh criterion for limit of resolution, resolving power.

Polarization: Polarization of light, types of polarized light, Brewster law, Malus law, double refraction, construction and working of Nicol's Prism, action of Polarizer and analyzer, Quarter wave and Half wave plates.

UNIT-III: Lasers and Optical Fibres : Lasers: induced absorption, spontaneous and stimulated emissions, Properties of laser light, population inversion, meta-stable states, pumping mechanisms, components of laser, construction and working of Ruby laser, He-Ne laser, and CO₂ lasers, advantages and applications of lasers.

Optical Fibres: Introduction, total internal reflection, propagation of light in optical fibre, numerical aperture, acceptance angle, types of optical fibres, evanescent field, light sources for

optical fibers, various signal losses in optical fibers: Attenuation-Absorption, Scattering, bending, alignment losses, Signal distortion: intermodal and intra model losses. Block diagram of optical communication system, advantages and application of optical fibers.

UNIT-IV: Acoustics: Architectural Acoustics: sound, classification of sound:musical sounds and noise, Characteristics of musical sound-pitch, loudness, timbre, sound intensity, sound pressure levels, phon, Sone, reverberation time, Sabine's formula, sound absorbent materials, absorption coefficient, conditions for good acoustics of a building-acoustic quieting: effects and remedies

Ultrasonics:propertiesofultrasonics,typesofultrasonicwaves,productionofultrasonics by piezoelectric and magnetostriction methods, detection of ultrasonics by piezoelectric, Kundt's tube, flame test, thermal detector, applications of ultrasonics: SONAR, cavitation (cleaning), drilling,sonogram

UNIT-V: Sensors For Structural Health Monitoring : Introduction to Structural Health Monitoring (SHM), Types of sensors, Vibrating Wire Traducers,Fiber Optic Sensors, Accelerometer, Linear Variable Differential Transformer (LVDT),Load Cells,Strain Gauges in Structural Health Monitoring, Inclinator (Slope Indicator), Tiltmeter, Acoustic Emission Sensor, Temperature Sensors

Learning Resources:

1. J Walker, D., Halliday and R Resnick, Principles of Physics, 10th edition, Wiley, 2016,
2. Jewett and Serway, Physics for Scientists and Engineering, 7th edition, 2012.
3. A. P. French, Vibration's and Waves, CRC Press,2003
4. M.N. Avadhanulu and P.G. Kshirsagar and TVS Arun Murthy A Text Book Engineering Physics, 11thEdition, S. Chand,2018.
5. Senior, Optical Fiber Communications: Principles and Practice, 3rd Edition, Pearson,2010
6. Gerd Keiser, Optical Fiber Communications, 4th edition, Tata McGraw, 2010

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 Civil, CSE, ECE, EEE & Mechanical Engineering)

SYLLABUS FOR B.E. I SEMESTER

L : T : P(Hrs./week):3 : 0 : 0	SEE Marks:60	Course Code: U21ES010CE
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:
<ol style="list-style-type: none">1. Explain the resolution of a system of forces (coplanar, spatial, concurrent, non-concurrent) and compute their resultant.2. Solve particle equilibrium problem using equation of equilibrium3. Determine forces in the members of a truss4. Perform analysis of bodies lying on rough surfaces.5. Locate the centroid of a body and also compute the area moment of inertia of standard and composite sections.	<ol style="list-style-type: none">1. Determine resultant of forces acting on a body.2. Analyse equilibrium of a body subjected to a system of forces.3. Perform analysis of trusses using method of joints and method of sections.4. Solve problem of bodies subjected to friction.5. Find the location of centroid and calculate moment of inertia and polar moment of inertia of a given section.

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

UNIT-II: Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of planar and spatial system.

UNIT-III: Determinate Trusses: Analysis of plane trusses like Warren girder, Pratt truss, Fink truss etc using method of joints and method of sections.

UNIT-IV: Friction: Laws of friction. Application to simple systems, Connected systems and belt friction, Wedge friction.

UNIT-V: Centroid and Moment of Inertia: Centroids of lines, areas and volumes, Moment of inertia of areas, Composite areas, Polar moment of inertia, Radius of gyration.

Learning Resources:

1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2011.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., JaanKiusalaas., "Engineering Mechanics", Cengage Learning, 2014.
4. Beer F.P & Johnston E.R Jr. "VectorMechanics for Engineers", TMH, 2019.
5. Hibbeler R.C, "Engineering Mechanics", Pearson Education, 2017.

6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2014.
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: U21ES120CE
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 uses, lettering, types of lines and dimensioning methods.

Scales: Reduced and Enlarged scales, Representative fraction, Scales: plain, diagonal only.

Regular Polygons: Polygons given the length of side only.

UNIT-II: Engineering curves: Ellipse, Parabola and Hyperbola (Eccentricity method only), Cycloid, Epicycloid, Hypocycloid and Involute.

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: Polyhedra, 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", Charotar Publishers, 2014.
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", SK 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 McGraw Hill, 2012
7. BVR Gupta, M Raja Roy, "Engineering Drawing with AutoCad", IK Int 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: U21ES110EE
Credits:2	CIE Marks: 40	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 an understanding of basics in Electrical circuits 2 To explain the working principles of Electrical Machines.	1 Analyze Electrical circuits to compute and measure the parameters of Electrical Energy. 2 Comprehend the working principles of Electrical DC Machines. 3 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.

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. Gupta, A course in electrical installation estimating and costing, reprint 2013, published by S.K. Kataria&Sons.

7. V. D. Toro, "Electrical Engineering Fundamentals", Prentice Hall India, 1989.
The break-up of CIE : Internal Tests+Assignments+Quizzes

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
ENVIRONMENTAL SCIENCE
 (Common to Civil, EEE & ECE)

SYLLABUS FOR B.E. I-SEMESTER

L : T : P (Hrs./week): 2 : 0 : 0	SEE Marks:60	Course Code: U21MC010CE
Credits: - - -	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>In this subject the students will</i>	<i>Upon the completion of this course students will be able to</i>
1. Describe various types of natural resources available on the earth surface. 2. Explain the concepts of an ecosystem and the biotic and abiotic components of various aquatic ecosystems. 3. Identify the values, threats of biodiversity, endangered and endemic species of India along with the conservation of biodiversity. 4. Explain the causes, effects and control measures of various types of environmental pollutions. 5. Describe the methods for water conservation, the causes, effects of global warming, climate change, acid rain, ozone layer depletion, population explosion.	1. Describe the various types of natural resources. 2. Differentiate between various biotic and abiotic components of ecosystem. 3. Examine the values, threats of biodiversity, the methods of conservation, endangered and endemic species of India. 4. Illustrate causes, effects, control measures of various types of environmental pollutions. 5. Explain the methods of water conservation, causes, effects of climate change, global warming, acid rain and ozone layer depletion, population explosion.

UNIT-I: Environmental Studies: Definition, importance of environmental studies. Natural resources: Water resources; floods, drought, conflicts over water, dams-benefits and problems. Food resources; Effects of modern agriculture, fertilizer-pesticide problems, water logging salinity. Energy resources: Renewable and non-renewable energy resources. Land Resources, soil erosion and desertification.

UNIT-II: Ecosystems: Structure and function of an ecosystem, producers, consumers and decomposers, food chains, food webs, ecological pyramids, aquatic ecosystems (ponds, oceans, estuaries).

UNIT-III: Biodiversity: Genetic, species and ecosystem diversity. Values of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity.

UNIT-IV: Environmental Pollution: Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution, thermal pollution and solid waste & e-waste management.

UNIT-V: Social Aspects and the Environment: Water conservation, Climate change, global warming, acid rain, ozone layer depletion. Environmental Impact Assessment, population explosion.

Learning Resources:

1. Deswal S. and Deswal A., A Basic Course on Environmental studies, DhanpatRai& Co Pvt. Ltd. 2016
2. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2017
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. Saunders Co., USA, 2004.
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	:	2	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 & IT)

SYLLABUS FOR B.E. I-SEMESTER

L : T : P (Hrs./week):1:0:2	SEE Marks:60	Course Code: U21ES030CE
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 in using drawing instruments to convey exact and complete information of the object.	1. Acquire proficiency in instrumental drawing and will be able to visualize the object, draw conic sections and regular polygons.
2. Construct conic sections and regular polygons.	2. Draw the orthographic projections of points, lines and planes.
3. Construct the orthographic projections of points, lines, planes and solids.	3. Draw orthographic projections of regular and right solids
4. Draw sections and development of regular solids.	4. Draw the sections and development of regular solids
5. Visualize and construct isometric projections from orthographic projections of regular solids.	5. Visualise and draw the isometric view from the orthographic views of regular solids and combinations of solids.

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 in first quadrant only, Traces (By conventional methods only). Projections of perpendicular planes, oblique planes and their traces.

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

UNIT-IV: Sections and Developments of Solids: Sections of solids in simple positions only for prism, pyramid, cylinder and cone and their development.

UNIT-V: Isometric Projections: Principles of isometric projections – Isometric scale, Isometric axes, Isometric planes, Isometric view. Isometric views of lines, planes, regular solids, and combination of two solids.

Learning Resource:

1. Bhatt N.D. "Elementary Engineering Drawing", Charotar Publishers, 2014.
2. Thomas E French, Charles J Vierck, Robert J. Foster, "Engineering Drawing and Graphic Technology", McGraw Hill Education, 1993.
3. Gill P.S. "Engineering Drawing: Geometrical Drawing", SK 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 McGraw Hill, 2012
7. BVR Gupta, M Raja Roy, "Engineering Drawing with AutoCad", IK Int 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 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
APPLIED PHYSICS LAB
 (Common to Civil and Mechanical Engineering)

SYLLABUS FOR B.E. I-SEMESTER

L : T : P (Hrs./week): 0 : 0 : 2	SEE Marks:50	Course Code: U21BS011PH
Credits: 1	CIE Marks:30	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>In this subject the students will</i>	<i>Upon the completion of this course students will be able to</i>
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 result from the graphs drawn using experimental values 5. To write the record independently with appropriate results	1. Conduct experiment dependently and record the measurements. 2. Outline the precautions required to be taken for each experiments 3. Compare the experimental results with standard values and estimate errors. 4. Draw graphs and interpret the results with respect to graphical and theoretical values 5. Write the summary of the experiment and draw appropriate conclusions

- Determination of moment of inertia of a Fly Wheel
- Estimation of errors in the time period and determination of 'g' using Simple pendulum
- Torsional Pendulum to calculate rigidity modulus of material of a wire.
- Determination of frequency of electrically maintained Tuning fork- Melde's experiment
- Determination of radius of gyration and acceleration due to gravity using Compound Pendulum.
- Determination of wavelength of Semiconductor lasers.
- Determination of radius of curvature of a Plano-convex lens by forming Newton's Rings.
- Determination of wavelength under normal incidence method using diffraction grating
- Determination of specific rotation of an optically active solution by polarimeter
- Calculation of numerical aperture, acceptance angle and power loss due to bending of an optical fibre.
- Study of I-V characteristics of P-N Junction diode
- Estimation of Thermistor constants
- Study of I-V characteristics of solar cell and to calculate fill factor and efficiency
- Gyroscope- study of gyroscopic effects.
- Determination of wavelength of a light source by Michelson interferometer

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
ENGINEERING WORKSHOP-I**

(Common to Mechanical, Civil & EEE branches)

SYLLABUS FOR B.E. I-SEMESTER

L:T:P(Hrs/week):0:0:2	SEE Marks:50	Course Code:U21ES111ME
Credits :01	CIE Marks:30	Duration of SEE:03Hours

COURSE OBJECTIVES <i>The objective of the course is to</i>	COURSE OUTCOMES <i>On completion of the course, students will be able to</i>
1 know basic workshop processes, adopt safety practices while working with various tools 2 identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.	1 create models in Carpentry, plumbing, Electrical & Electronics and Sheet metal 2 trades by using the relevant tools. measure and inspect the finished 3 components using suitable measuring instruments. apply basic electrical and electronics engineering knowledge to make simple electrical circuits and check their functionality along with practice in soldering of electronic components.

List of the Experiments:

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

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

SHEET METAL:

1. Rectangular box
2. Rectangular scoop with handle
3. Making a funnel with soldering

Additional Experiments

1. Plastic Moulding: Injection moulding of plastic spoon (demo)
2. Plumbing: Geyser connection(demo)
3. Electrical & Electronics: LT Distribution with loads (Demo)
4. Carpentry: Wood turning operation (demo)
5. Sheet Metal: Making a T-Joint (Demo).

Learning Resources:

1. Hajra Choudhury S.K., Hajra Choudhury A.K., Nirjar Roy S.K. "Elements of Workshop Technology" Vol-I 2008 & Vol-II 2010 Media Promoters & Publishers Pvt. Limited, Mumbai.
2. Kalpakjian S. and Steven R. Schmid, "Manufacturing Engineering and Technology" 4th Edition, Pearson Education India, 2002.
3. Gowri P., Hariharan and Suresh Babu 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)
IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
BASIC ELECTRICAL ENGINEERING FOR CIVIL ENGINEERS LAB
(FOR CIVIL ENGINEERING STUDENTS)

SYLLABUS FOR B.E. I SEMESTER

L:T:P(Hrs./week):0:0:2	SEE Marks:50	Course Code: U21ES111EE
Credits :01	CIE Marks:30	Duration of SEE: 3 Hours

COURSE OBJECTIVES	COURSE OUTCOMES
	On completion of the course, students will be able to
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. 3. Find the Efficiency of the DC and AC machines.

List of Experiments:

- 1 Basic safety precautions. Introduction and use of measuring instruments – voltmeter, ammeter, multi-meter, oscilloscope. Practical resistors, capacitors and inductors
- 2 Verification of Kirchoff's Voltage Law & Kirchoff's Current Law Verification of mesh and nodal analysis.
- 3
- 4 Sinusoidal steady state response of R-L, and R-C circuits – Measurement of phase angle
- 5 Measurement of cumulative three-phase power in balanced three-phase circuits.
- 6 Improvement of power factor in RLC circuits.
- 7 Demonstration of cut-out sections of machines: dc machine (commutator-brush arrangement), induction machine (squirrel cage rotor).
- 8 Torque Speed Characteristic of dc shunt motor
- 9 Speed control of dc shunt motor
- 10 Torque-Slip Characteristic of a three-phase induction motor
- 11 Measurement of electrical energy

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 assessment of each experiment			18
Duration of Internal Test:	3 Hours		

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

SCHEME OF INSTRUCTION AND EXAMINATION (R-21)
B.E. – (CIVIL ENGINEERING) II-SEMESTER ACADEMIC YEAR 2021 - 2022
(Students Admitted in 2021-22)

B.E (Civil) II Semester									
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits	
		Hours per Week			Duration in Hrs	Maximum Marks			
		L	T	P/D		SEE	CIE		
THEORY									
U21HS010EH	English Language and Communication	2	-	-	3	60	40	2	
U21BS210MA	Differential Equations & Complex Analysis	3	-	-	3	60	40	3	
U21BS020CH	Applied Chemistry	3	-	-	3	60	40	3	
U21BS210CE	Geology	2	-	-	3	60	40	2	
U21ES210CE	Engineering Mechanics	3	-	-	3	60	40	3	
U21ES220CE	Engineering Drawing – II	1	-	2	3	60	40	2	
U21MC010ME	Introduction to Entrepreneurship	1	-	-	2	40	30	-	
PRACTICALS									
U21HS111EH	English Language and Communication Skills Lab	-	-	2	3	50	30	1	
U21BS011CH	Chemistry Lab	-	-	2	3	50	30	1	
U21ES211ME	Engineering Workshop-II	-	-	2	3	50	30	1	
TOTAL		15	-	8		550	360	18	
GRAND TOTAL		23				910			
<i>Note: The left over hours are to be allotted to Sports / Library / Mentor Interaction /CC / RC / TC / PDC based on the requirement.</i>									

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)
DEPARTMENT OF CIVIL ENGINEERING

SCHEME OF INSTRUCTION AND EXAMINATION (R-21)
B.E. – (CIVIL ENGINEERING) II-SEMESTER ACADEMIC YEAR 2021 - 2022
(Students Admitted in 2021-22)

INTERDISCIPLINARY COURSES OFFERED BY CIVIL ENGINEERING

B.E (Civil) II Semester								
Course Code	Name of the Course	Scheme of Instruction			Scheme of Examination			Credits
		Hours per Week			Duration in Hrs	Maximum Marks		
		L	T	P/D		SEE	CIE	
THEORY (Common to EEE & ECE)								
U21ES030CE	Basic Engineering Drawing	1	-	2	2	60	40	2
THEORY (Common to CSE, Mech. & IT)								
U21MC010CE	Environmental Science	2	-	-	3	60	40	-
THEORY (Mech.)								
U21ES210CE	Engineering Mechanics	3	-	-	3	60	40	3
U21ES220CE	Engineering Drawing – II	1	-	2	3	60	40	2
THEORY (IT)								
U21ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3

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

**DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
ENGLISH LANGUAGE AND COMMUNICATION
(Common to Civil & Mechanical Engineering)**

SYLLABUS FOR B.E. II-SEMESTER

Instruction: 2 Hours	SEE: 60	Course code:U21HS010EH
Credits: 2	CIE: 40	Duration of SEE: 3 Hours
COURSE OBJECTIVES The course will enable the learners to: 1. Understand the role and importance of communications skills. 2. Develop the habit of listening effectively to various speakers and lectures. 3. Develop reading strategies in order to understand various types of texts 4. Understand the various features and formats of writing. 5. Comprehend grammar constructs and vocabulary used in different contexts.	COURSE OUTCOMES At the end of the course the learners will be able to: - 1. Communicate effectively, appropriately and ethically in both professional & personal spheres. 2. Listen for gist and make inferences from various speeches and converse intelligibly in various contexts. 3. Evaluate and infer various text types. 4. Compose letters and essays, coherently and cohesively using discourse marks. 5. Construct grammatically correct sentences using adequate vocabulary.	

UNIT-1 1.0 Effective communication and Interpersonal skills

- 1.1 Role and Importance of Language and Communication; Functions of communication; Process of Communication; Types of Communication; Styles of Communication; Channels of Communication; Barriers in Communication and how to overcome them.
- 1.2 Politeness theory.
- 1.3 Johari Window.
- 1.4 Team building skills and team work.
- 1.5 Persuasion techniques.

UNIT-2 2.0 Listening and Speaking skills

- 2.1 Importance of listening for effective communication; Elements of Active listening.
- 2.2 Speaking skills: -Speaking strategies; Telephone etiquette.

UNIT-3 3.0 Reading and Writing skills

- 3.1 Sub-skills of Reading; Understanding the functions of different texts, Reading Comprehension-Global and Local.
- 3.2 Features of Writing: -
Organizing principles of writing paragraphs-Coherence, Cohesion & Unity; Use of appropriate linkers. Paraphrasing and Summarizing skills.

3.3 Written Communication:

- Etiquette of Email writing
- Request letters
- Creative writing- Pictionary, Taglines, Script Writing

UNIT-4 4.0 Vocabulary Building and Grammar

4.1 **Vocabulary Building:** The concept of Word Formation-Prefixes and Suffixes; Synonyms, Antonyms, and Standard abbreviations. Word origin-Etymology; One-word substitutes; Collocation; Idioms.

4.2 **Functional Grammar:** Articles, Prepositions; Tense and Aspect; Subject- Verb agreement; Connectives; Direct and Indirect Speech; Active-Passive

All these aspects will be taught as common errors.

UNIT-5 5.0 Reading for appreciation of literary texts

5.1 **Prosetext-** On Shaking Hands- A G Gardiner.

5.2 **Poem-** What life should be- Patricia A Fleming.

Prescribed textbook for theory:

Technical communication - Principles and Practice (2nd Edition 2014) - Meenakshi Raman and Sangeeta Sharma- Oxford University Press.

Learning Resources:

1. E.Suresh kumar, P. Sreehari and J. Savithri - Essential English
2. Reading comprehension - Nuttal.J.C - Orient Blackswan
3. Sunitha Mishra, C. Murali Krishna, Communication Skills for Engineers, Pearson, 2004.
4. M. Ashraf Rizvi. Effective Technical Communication. Tata Mcgraw Hill, 2005.
5. Allen and Waters., How English Works.
6. Willis Jane., English through English.
7. Brown, Penelope and Stephen C. Levinson. 1978. Universals in language usage: politeness phenomena: Cambridge University Press.

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 MATHEMATICS
DIFFERENTIAL EQUATIONS & COMPLEX ANALYSIS**

(Common to Civil, EEE, ECE, Mech.)

Instruction : 3:0:0	SEE Marks:60	Course Code: U21BS210MA
Credits : 3	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>The course will enable the students to :</i>	<i>At the end of the course students should be able to:</i>
<ol style="list-style-type: none"> 1. Study the concepts of matrices, Eigen values and Eigen vectors, Diagonalization and canonical form of a quadratic form. 2. Solve first order differential equations using elementary techniques and learn its applications. 3. Use the various higher order homogeneous and non-homogeneous linear differential equations with constant coefficients to solve it and apply on electrical circuits 4. Understand the Analytic functions, conditions and harmonic functions. 5. Evaluate a line integral of a function of a complex variable using Cauchy's integral formula, and how to evaluate Taylor's and Laurent Series. 	<ol style="list-style-type: none"> 1. Find the rank of a given matrix, diagonalizable a given matrix and reduce a quadratic form to canonical form and find its nature. 2. Identify the suitable I.F and solve differential equations, model the real time electrical engineering problems viz., RC & LR Circuits into differential equations and solve. 3. Apply various higher order Linear Differential equations, to solve LC and LCR circuits. 4. Apply the condition(s) for a complex variable function to be analytic and/or harmonic and to construct an Analytic function. 5. Evaluate complex integrals by Cauchy's theorem and Cauchy's Integral formula and define singularities of a function and to expand a given function as a Taylor's / Laurent's series.

UNIT–I: Matrices: Rank of a Matrix- Linearly independence and dependence of Vectors - Characteristic equation- -Eigen values and Eigenvectors - Cayley - Hamilton Theorem (without proof)- Diagonalization using Similarity Transformation.

UNIT–II: Ordinary Differential Equations Of First Order: Exact first order differential equations - Integrating factors- Clairaut's equation -Applications of First Order Differential Equations -Orthogonal trajectories (Cartesian families) – LR and RC Circuits.

UNIT–III: Higher Order Linear Differential Equations: Solutions of Homogeneous and Non Homogeneous linear equations with constant coefficients- Method of Variation of Parameters –Applications of linear differential equations to LCR circuits

UNIT–IV: Differentiation of Complex Function: Limits and Continuity of function - Differentiability and Analyticity - Necessary & Sufficient Condition for a Function to be Analytic - Milne-Thompson's method -Harmonic Functions.

UNIT–V: Integration of Complex Function: Complex Integration- Cauchy's Theorem - Extension of Cauchy's Theorem for multiply connected regions- Cauchy's Integral Formula - Power series - Taylor's Series - Laurent's Series (without proofs) –Poles and Residues.

Learning Resource:

1. Advanced Engineering Mathematics 3rd Edition, R.K.Jain & S.R.K.Iyengar, Narosa Publishing House.
2. Higher Engineering Mathematics 40th Edition 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. <http://mathworld.wolfram.com/topics>
8. <http://www.nptel.ac.in/course.php>
9. <https://www.coursera.org/in>
10. <http://davidbau.com>

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 CHEMISTRY
APPLIED CHEMISTRY

(Common to Civil & Mechanical Engineering)

Instruction : 3:0:1	SEE Marks:60	Course Code: U21BS020CH
Credits : 3	CIE Marks:40	Duration of SEE: 3 Hrs

LEARNING OBJECTIVES:	LEARNING OUTCOMES
The course will enable the students to:	At the end of the course students should be able to:
<ol style="list-style-type: none"> 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 and their applications. 4. Emphasize upon the quantity and quality of fossil fuels and need for bio- diesel 5. Describe the requirements of water for domestic and industrial uses and the behavior of composition of heterogeneous equilibrium systems 	<ol style="list-style-type: none"> 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. Categorize the polymers and synthesis of a few polymers along with their applications. 4. Rate the fuels and suggest methods for enhancement of the quality of fuels for the required output. 5. Suggest appropriate treatment methods of water to make it fit for domestic and industrial applications and apply the principle of phase rule to heterogeneous equilibrium.

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, weak acid vs strong base and mixture of acids vs strong base.

Cells- electrolytic and electrochemical cells. IUPAC convention of cell notation, cell reaction, concept of electrode potential, electro motive force (EMF). Electrochemical series – applications, 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. Principle and Applications of potentiometry- acid base and redox reaction (Fe(II) Vs KMnO_4).

UNIT-II: Battery Technology :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, Ni-Cd 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 the structure of polymers. Classification of polymers-a) homo and co-polymers b) homo chain and hetero chain polymers. c) plastics, elastomers, fibers and resins.

Types of Polymerization - Addition and condensation polymerization.

Glass transition temperature (T_g), factors affecting T_g.

Molecular weight- number average and weight average molecular weight, numericals.

Plastics: Thermo plastics and thermosets - preparation, properties and applications of a) Aramid (Kevlar) b) Poly styrene(PS)

Elastomers: Natural rubber- structure – chemistry of vulcanization and advantages.

Artificial rubbers: Preparation, properties and uses of Buna-S and Buna-N.

Biodegradable polymers: Concept, preparation and uses of poly lactic acid.

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

UNIT-IV-Chemical Fuels: Fuels: Introduction, classification, requisites of a good fuel. Calorific value (CV)-HCV and LCV. Calculation of CV using Dulong's formula, numericals. Chemistry of combustion - numericals on weight- volume and weight-weight methods.

Solid Fuels: Coal: Proximate and ultimate analysis of coal and their significance.

Liquid Fuels: Composition and CV of gasoline, cracking: Fixed bed catalytic cracking method. Knocking and its significance, octane number, enhancement of quality of gasoline by reforming and anti- knock agents. Leaded and unleaded petrol, power alcohol. Catalytic converters and their role in reducing the toxicity of automobile exhaust emissions. Composition and CV of diesel oil, cetane number.

Bio-diesel: Source, chemistry of transesterification and advantages of bio diesel.

UNIT-V: Water Technology And Phase Rule : Hardness of water- types. Calculation of degree of hardness of water-numericals. Determination of hardness of water by EDTA method - numericals. Alkalinity of water and its determination-Numericals. Boiler troubles- scales and sludges formation and prevention-Calgon conditioning. Desalination of water by Reverse Osmosis. Specifications of potable water. Water treatment for drinking purpose sterilization by chlorination- concept of Break Point Chlorination.

Phase rule- Explanation of terms involved, one component system: Water system, condensed phase rule, two component systems: Lead- Silver (Pb-Ag) system, Eutectics and their applications in safety fuses and solders.

Learning Resources:

1. PC Jain, M Jain Engineering Chemistry, Dhanapathi Rai and sons (16th edition), New Delhi.
2. O.G. PALANNA, Engineering Chemistry, TMH Edition.
3. Sashi Chawla, Text book of Engineering Chemistry, Dhanapathi Rai &sons, New Delhi.
4. Wiley Engineering chemistry, Wiley India pvt Ltd, II edition.
5. Chemistry in engineering and technology by J.C. Kuriacose and Rajaram.
6. University chemistry, by B. H. Mahan
7. Physical Chemistry, by P. W. Atkins
8. S. S. Dara, S Chand and sons, Engineering Chemistry, New Delhi.
9. Puri, Sharma and Pathania Principles of physical chemistry, Vishal Publishing Co.
10. Polymer chemistry by Gowariker
11. Engineering Chemistry (NPTEL Web-book), by B. L. Tembe, Kamaluddin and M. S. Krishnan

12. NPTEL Polymer Chemistry Course, D. Dhara, IIT Kharagpur.

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
GEOLOGY

SYLLABUS FOR B.E. II-SEMESTER

L : T : P (Hrs./week): 2 : 0 : 0	SEE Marks:60	Course Code: U21BS210CE
Credits: 2	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
In this subject the students will:	Upon the completion of this course students will be able to:
<ol style="list-style-type: none"> 1. Describe the various properties of minerals, distinguishing features of rocks. 2. Describe the geological structures, processes of weathering and classification of soils. 3. Explain the process of ground water exploration. 4. Illustrate the knowledge of geological studies for dams and reservoirs. 5. Illustrate the knowledge of geological studies for tunnels, list the causes and effects of earth quakes, and landslides with their mitigation measures. 	<ol style="list-style-type: none"> 1. Identify the different minerals and distinguishing features exhibited by the rocks 2. Identify the geological structures like folds, faults, joints and unconformities present in rocks and describe the processes of weathering, classify and distribution of soils. 3. Assess the occurrence of ground water in various lithological formations and location of bore wells. 4. Evaluate the suitability of site for the dam construction. 5. Evaluate the suitability of site for the tunnel construction, recognize the causes and effects of earth quakes, and landslides and suggest mitigation measures.

UNIT-I:Mineralogy: Definition of mineral and crystal, physical properties used in the identification of minerals, physical properties of quartz, feldspars, hornblende, biotite, muscovite, talc, olivine, calcite, kyanite and garnet.

Rocks: Textures and structures of igneous, sedimentary and metamorphic rocks. Geological description and Indian occurrence of granite, basalt, dolerite, gabbro, laterite, sandstone, shale, limestone, slate, gneiss, quartzite, marble.

UNIT-II: Geological Structures: Classification, mode of origin and engineering importance of folds, faults, joints and unconformities.

Rock Weathering: Processes and end-products of weathering. Susceptibility of rocks to weathering; assessment of the degree of weathering, tests of weatherability.

Geology of Soils: Formation of soils, soil profile, nature of parent materials, relative stability of minerals, geological classification of soils, types of Indian soils.

UNIT-III: Hydrogeology: Hydrological cycle, water table, aquifers, occurrence of ground water in various lithological formations. Ground water movement, springs. Ground water exploration.

UNIT-IV: Geology for Dams and Reservoirs: Types of dams. Dam foundations and reservoirs. Engineering and geological investigations for a masonry dam site; analysis of dam failures in the past. Engineering geology of major dam sites of India, Reservoir induced seismicity.

UNIT-V: Tunnels: Engineering geological investigations of tunnels in rock; Stand-up time of different rocks. Problems of tunnelling, pay line and over break, logging of tunnels, and geology of some well known tunnels.

Geological Hazards: Geological aspects of earthquakes and landslides.

Learning Resources:

1. Parbin Singh, Engineering and General Geology, S.K.Kataria & Sons, 2010.
2. Chennakesavulu N., Text Book of Engineering Geology, Macmillan India Ltd., 2009.
3. Gokhale K.V.G.K., Engineering Geology, B.S. Publishers, 2013.
4. Bell F.G., Fundamentals of Engineering Geology, Aditya Books Pvt. Ltd., 2007.
5. Krynine D.P. and Judd W. R., Principles of Engineering Geology and Geotechnics, CBS Publishers & Distributors, Indian Edition, 2005.
6. Subinoy Gangopadhyay, Engineering Geology, Oxford University Press, 2013.

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
 (Common to Civil & Mechanical Engineering)

SYLLABUS FOR B.E. II-SEMESTER

L:T:P (Hrs./week): 3:0:0	SEE Marks: 60	Course Code: U21ES210CE
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. Determine the mass moment of inertia and product of inertia of standard and composite sections. 2. Understand the concepts of dynamics and its principles. 3. Explain kinetics and kinematics of particles, projectiles, curvilinear motion, centroidal motion and plane motion of rigid bodies. 4. Impart the concepts of work-energy method and its applications to translation, rotation and plane motion. 5. Impart the concept of impulse momentum relation	1. Compute mass moment of inertia and product of inertia of standard and composite section. 2. Distinguish between statics and dynamics and differentiate between kinematics and kinetics. 3. Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion. 4. Solve problems using work energy equations for translation, fixed axis rotation and plane motion. 5. Solve problems using impulse momentum equation

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

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

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

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

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

Learning Resources:

1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2011.
2. Timoshenko S.P and Young D.H., J V Rao, Sukumar Patil, "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. "VectorMechanics 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 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: U21ES220CE
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.

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", Charotar Publishers, 2014.
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", SK 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 McGraw Hill, 2012
7. BVR Gupta, M Raja Roy, "Engineering Drawing with AutoCAD", IK Int 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 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 MECHANICAL ENGINEERING
INTRODUCTION TO ENTREPRENEURSHIP
 SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs/week):1:0:0	SEE Marks:40	Course Code: U21MC010ME
Credits : --	CIE Marks:30	Duration of SEE: 02Hours

COURSE OBJECTIVE <i>The objective of the course is to</i>	COURSE OUTCOMES <i>On completion of the course, students will be able to</i>
Inspire students to develop an entrepreneurial mind-set, educate about the resources and schemes available to start enterprises in India.	1 Get awareness about entrepreneurship and potentially become an entrepreneur. 2 Discern the characteristics required to be a successful entrepreneur 3 Know the importance of effective communication. 4 Demonstrate effective sales skills

Unit-I: Sources of new ideas, Techniques for generating ideas. Team formation, how entrepreneurship has changed the country and world, entrepreneurial myths, E-cells and their significance, success story of Entrepreneurs, eg: Practo, Global entrepreneurs, Entrepreneurial journeys, challenges, and successes, characteristics of a Successful Entrepreneur, Entrepreneurial styles, Introduction to business model.

Unit-II: Importance of effective communication for entrepreneurs, Communication barriers, miscommunication, incorrect assumptions about people, importance of listening, Design thinking-a problem solving process, Sales skills, understanding the customer-centric approach, Personal selling techniques, show and tell, Elevator pitch, Managing risks and learning from failures, Women entrepreneurs.

Learning Resources:

1. Bruce R. Barringer and R. Duane Ireland, "Entrepreneurship: successfully launching new ventures", 3rd edition, Pearson Prentice Hall, 2009.
2. P. Denning and R. Dunham, "The Innovator's Way", MIT Press: Cambridge, Massachusetts, 2010.
3. Arya Kumar, "Entrepreneurship", Pearson Education, Delhi, 2012.
4. Michael H. Morris, D.F.Kuratko, J G Covin, "Corporate Entrepreneurship and Innovation", Cengage learning, New Delhi,2010
6. Peter F. Drucker, "Innovation and Entrepreneurship", Routledge Classics, 2015.
7. Eric Ries, "The Lean Start-up", Currency, 1st edition, 2011.
8. <http://www.learnwise.org>

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

1	No. of Internal Tests:	01	Max. Marks for each Internal Test:	20
2	No. of Assignments:	01	Max. Marks for each Assignment:	05
3	No. of Quizzes:	01	Max. Marks for each Quiz Test:	05
Duration of Internal Test: 1 Hour				

VASAVI COLLEGE OF ENGINEERING (Autonomous)

IBRAHIMBAGH, HYDERABAD – 500 031

DEPARTMENT OF CIVIL ENGINEERING

BASIC ENGINEERING DRAWING

(Common to EEE & ECE)

SYLLABUS FOR B.E. II-SEMESTER

L : T : P (Hrs./week):1:0 : 2	SEE Marks:60	Course Code:U21ES030CE
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:
<ol style="list-style-type: none"> 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. 4. Draw sections and development of regular solids. 5. Visualize and construct isometric projections from orthographic projections of regular solids. 	<ol style="list-style-type: none"> 1. Acquire proficiency in instrumental drawing and will be able to visualize the object, draw conic sections and regular polygons. 2. Draw the orthographic projections of points, lines and planes. 3. Draw orthographic projections of regular and right solids 4. Draw the sections and development of regular solids 5. Visualise and draw the isometric view from the orthographic views of regular solids and combinations of solids.

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 in first quadrant only, Traces (By conventional methods only). Projections of perpendicular planes, oblique planes and their traces.

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

UNIT-IV: Sections and Developments of Solids: Sections of solids in simple positions only for prism, pyramid, cylinder and cone and their development.

UNIT-V: Isometric Projections: Principles of isometric projections – Isometric scale, Isometric axes, Isometric planes, Isometric view. Isometric views of lines, planes, regular solids, and combination of two solids.

Learning Resource:

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

2. Thomas E French, Charles J Vierck, Robert J. Foster, "Engineering Drawing and Graphic Technology", McGraw Hill Education, 1993.
3. Gill P.S. "Engineering Drawing: Geometrical Drawing", SK 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 McGraw Hill, 2012
7. BVR Gupta, M Raja Roy, "Engineering Drawing with AutoCAD", IK Int 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 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, Mech., & IT)

SYLLABUS FOR B.E. II-SEMESTER

L : T : P (Hrs./week): 2 : 0 : 0	SEE Marks:60	Course Code: U21MC010CE
Credit: - - -	CIE Marks:40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>In this subject the students will</i>	<i>Upon the completion of this course students will be able to</i>
1. Describe various types of natural resources available on the earth surface. 2. Explain the concepts of an ecosystem and the biotic and abiotic components of various aquatic ecosystems. 3. Identify the values, threats of biodiversity, endangered and endemic species of India along with the conservation of biodiversity. 4. Explain the causes, effects and control measures of various types of environmental pollutions. 5. Describe the methods for water conservation, the causes, effects of global warming, climate change, acid rain, ozone layer depletion, population explosion.	1. Describe the various types of natural resources. 2. Differentiate between various biotic and abiotic components of ecosystem. 3. Examine the values, threats of biodiversity, the methods of conservation, endangered and endemic species of India. 4. Illustrate causes, effects, control measures of various types of environmental pollutions. 5. Explain the methods of water conservation, causes, effects of climate change, global warming, acid rain and ozone layer depletion, population explosion.

UNIT-I: Environmental Studies: Definition, importance of environmental studies. Natural resources: Water resources; floods, drought, conflicts over water, dams-benefits and problems. Food resources; Effects of modern agriculture, fertilizer-pesticide problems, water logging salinity. Energy resources: Renewable and non-renewable energy resources. Land Resources, soil erosion and desertification.

UNIT-II: Ecosystems: Structure and function of an ecosystem, producers, consumers and decomposers, food chains, food webs, ecological pyramids, aquatic ecosystems (ponds, oceans, estuaries).

UNIT-III: Biodiversity: Genetic, species and ecosystem diversity. Values of biodiversity, threats to biodiversity, endangered and endemic species of India, conservation of biodiversity.

UNIT-IV: Environmental Pollution: Causes, effects and control measures of air pollution, water pollution, soil pollution, noise pollution, thermal pollution and solid waste & e-waste management.

UNIT-V: Social Aspects and the Environment: Water conservation, Climate change, global

warming, acid rain, ozone layer depletion. Environmental Impact Assessment, population explosion.

Learning Resources:

1. Deswal S. and Deswal A., A Basic Course on Environmental studies, DhanpatRai& Co Pvt. Ltd. 2016
2. Benny Joseph, Environmental Studies, Tata McGraw-Hill, 2017
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. Saunders Co., USA, 2004.
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	:	2	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
 (For IT)

SYLLABUS FOR B.E. II SEMESTER

L : T : P(Hrs./week):3 : 0 : 0	SEE Marks:60	Course Code: U21ES010CE
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, spatial, concurrent, non-concurrent) and compute their resultant. 2. Solve particle equilibrium problem using equation of equilibrium 3. Determine forces in the members of a truss 4. Perform analysis of bodies lying on rough surfaces. 5. Locate the centroid of a body and also compute the area moment of inertia of standard and composite sections.	1. Determine resultant of forces acting on a body. 2. Analyse equilibrium of a body subjected to a system of forces. 3. Perform analysis of trusses using method of joints and method of sections. 4. Solve problem of bodies subjected to friction. 5. Find the location of centroid and calculate moment of inertia and polar moment of inertia of a given section.

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

UNIT-II: Equilibrium of Force Systems: Free body diagram, Equations of equilibrium, Equilibrium of planar and spatial system.

UNIT-III: Determinate Trusses: Analysis of plane trusses like Warren girder, Pratt truss, Fink truss etc using method of joints and method of sections.

UNIT-IV: Friction: Laws of friction. Application to simple systems, Connected systems and belt friction, Wedge friction.

UNIT-V: Centroid and Moment of Inertia: Centroids of lines, areas and volumes, Moment of inertia of areas, Composite areas, Polar moment of inertia, Radius of gyration.

Learning Resources:

1. Singer F.L "Engineering Mechanics", Harper & Collins, Singapore, 3rd Edition 2011.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., JaanKiusalaas., "Engineering Mechanics", Cengage Learning, 2014.
4. Beer F.P & Johnston E.R Jr. "VectorMechanics for Engineers", TMH, 2019.
5. Hibbeler R.C, "Engineering Mechanics", Pearson Education, 2017.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.

7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2014.
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 SKILLS LABORATORY

(Common to all branches)

SYLLABUS FOR B.E. II-SEMESTER

L : T : P (Hrs/Week) : 2	SEE Marks : 50	Course Code: U21HS111EH
Credits: 1	CIE Marks : 30	Duration of SEE : Hours : 3

COURSE OBJECTIVES	COURSE OUTCOMES
The course will enable the students to:	On completion of the course, students will be able to:
1. 1. Learn the speech sounds, parts of speech and distinguish between vowel and consonant sounds in the English language to reduce mother tongue influence when speaking English.	1. Speak well using 'generally acceptable English' in terms of pronunciation and use of diction.
2. Understand and follow the rules in debates, group discussions, interviews.	2. Participate effectively in group discussions, public speaking, debates (formal and informal).
3. Develop reading skills and analyse various text types.	3. Analyse, evaluate and infer meaning from different types of texts.

1.0 PHONETICS LAB- TOPICS

1.1 Introduction to English Phonetics:

Introductory to auditory, acoustic and articulatory phonetics. Organs of speech: the respiratory, articulatory and phonatory systems.

1.2 Aspects of language learning and ear training activities- Homophones, homonyms. Words often confused. Parts of speech- Identification and pronunciation of nouns, adjectives, verbs and adverbs.

Longman Dictionary of Contemporary English- 6th Edition, 2020.

2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS

2.1 Group discussion:

Objectives of GD, Types of GDs; Initiating, Continuing, and concluding a GD.

2.2 Debate:

Understanding the difference between a debate and a group discussion, essentials of debates.

2.3 Public speaking:

Dos and don'ts of public speaking. Listening and analysing speeches of great personalities in history, TED talks, Documentaries and Movies.

2.4 Interview Skills - Basic HR questions.

Viva questions will be asked in internal and external exams.

3.0 READING SKILLS LAB - TOPICS

3.1 Teaching different types of texts for comprehension

3.2 **Poster Reading**- Analysing data, specific vocabulary items & pictorial forms and convert the same to a reading text and vice versa.

Viva questions will be asked in internal and external exams.

Longman Dictionary of Contemporary English - 6th Edition, 2020.

Prescribed textbook for laboratory:

Speak Well: Jayshree Mohanraj, Kandula Nirupa Rani and Indira Babbellapati - Orient Black Swan Longman Dictionary of Contemporary English - 6th Edition, 2020. (The students will be given the PDF format)

Learning Resources:

1. Balasubramanian: A textbook of English phonetics for Indian students, Macmillan, 2008.
2. Priyadarshini Patnaik : Group discussion and interviews, Cambridge University Press India private limited 2011.
3. Daniel Jones: Cambridge English Pronouncing Dictionary - A Definitive guide to contemporary English Pronunciation.
4. Reading Cards (Eng400): Orient Black Swan. Reading Squabble - Hadfield.
5. Rudolph F. Verderber, Kathleen S. Verderber, Deanna D. Sellnow: *The Challenge of Effective Speaking* 2012

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test:	3 Hours		

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

DEPARTMENT OF MECHANICAL ENGINEERING
CHEMISTRY LAB
SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs/week):0:0:2	SEE Marks:50	Course Code: U21BS011CH
Credits : 1	CIE Marks:30	Duration of SEE: 03Hours

LEARNING OBJECTIVES:	LEARNING OUTCOMES:
The course will enable the students to:	At the end of the course, students should be able to:
1. Describe the quantitative analytical techniques 2. Learn the skills to handle the instruments 3. Apply the theoretical principles in experiments 4. Examine the accuracy	1. Determine the amount of metals in the given solutions. 2. Analyse the hardness, alkalinity and chloride content of a given sample. 3. Estimate the amount of a substance in 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 ferrous iron in the given solution by permanganometry.
3. Estimation of chromium in the given solution by standardized FAS.
4. Estimation of copper in brass or given solution by hypo.
5. Estimation of available chlorine in bleaching powder.
6. Estimation of total hardness of given water sample.
7. Estimation of alkalinity of a given sample.
8. Conductometric acid-base titrations -Determination of strength of given acids (HCl Vs NaOH and CH_3COOH Vs NaOH).
9. Conductometric acid-base titrations- Determination of strength of acids in a given mixture of acids (HCl and CH_3COOH Vs NaOH)
10. Determination of strength of a given acid by Potentiometry.
11. Determination of concentration of a given FeSO_4 using redox titration by Potentiometry.
12. Determination of strength of a given acid by pH metry.
13. Determination of strength of permanganate or copper in brass solution by Colorimetry.
14. Determination of concentration of a salt by ion exchange method.
15. Synthesis of Aspirin or Phenol formaldehyde resin.

Learning Resources:

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

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test:	3 Hours		

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

DEPARTMENT OF MECHANICAL ENGINEERING
ENGINEERING WORKSHOP-II
SYLLABUS FOR B.E.II-SEMESTER
(COMMON TO MECHANICAL, CIVIL & EEE BRANCHES)

L:T:P(Hrs/week):0:0:2	SEE Marks:50	Course Code: U21ES211ME
Credits :01	CIE Marks:30	Duration of SEE:03Hours

COURSE OBJECTIVES <i>The course will enable the students to</i>	COURSE OUTCOMES <i>On completion of the course, students will be able to</i>
1 know basic workshop processes, adopt safety practices while working with various tools	1 create models in Smithy, Welding, fitting and Machining trades by using the relevant tools.
2 identify, select and use various marking, measuring, holding, striking and cutting tools & equipments.	2 measure and inspect the finished components using suitable measuring instruments.

List of the Experiments:

BLACK SMITHY

1. Flattening (round to square cross section)
2. Bending operation (U-shape)
3. S-shape hook

WELDING

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

FITTING

1. Template fitting (square fit)
2. V-groove fit
3. Drilling and Tapping

MACHINING

1. Plain turning and step turning
2. Taper turning
3. Thread cutting

ADDITIONAL EXPERIMENTS

1. Black Smithy: Fullering operation (demo)
2. Welding: Spot welding (demo)
3. Fitting: Assembly of pulley on a shaft with key (demo)
4. Machining: Additive manufacturing (demo)

Learning Resources:

1. Hajra Choudhury S.K., Hajra Choudhury A.K., Nirjar Roy S.K. "Elements of Workshop Technology" Vol-I 2008 & Vol-II 2010 Media Promoters & Publishers Pvt. Limited, Mumbai.

2. Kalpakjian S. and Steven R. Schmid, "Manufacturing Engineering and Technology" 4th Edition, Pearson Education India, 2002.
3. Gowri P., Hariharan and Suresh Babu 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
7. www.mewelding.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		