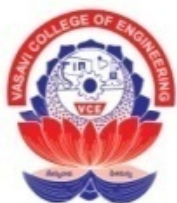


*With effect from the Academic Year 2019-20 (R-19)*

**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 2019–2020  
(For the students admitted in 2019-20)**



**DEPARTMENT OF CIVIL ENGINEERING  
+91-40-23146010, 23146011  
Fax: +91-40-23146090  
Website: [www.vce.ac.in](http://www.vce.ac.in)**

### **DEPARTMENT MISSION**

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

### **DEPARTMENT VISION**

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

## **ACADEMIC RULE AND REGULATIONS**

### **1. Attendance and Sessional marks requirements:**

1	B.E(4yrs)	Attendance: Minimum aggregate attendance required to eligible to attend semester end exams is 75% and 65% with Medical Condonation respectively.
		Sessional Marks: Minimum aggregate of sessional marks required to become eligible for appearing semester end examinations is 40%

### **II. Promotion rules for B.E(4ydc) course**

S.No	Semester/Class	Conditions to be fulfilled
1	I-SEM TO II- SEM	Regular course of study of I-SEM and 40% aggregate CIE marks in I-SEM
2	II-SEM TO III SEM	Regular course of study of II SEM and 40% aggregate CIE marks in II-SEM
		Must have secured at least 50% of total credits prescribed for I and II SEMs together
3	III-SEM to IV-SEM	Regular course of study of III-SEM and 40% aggregate CIE marks in III-SEM
		Regular course of study of IV SEM
4	IV-SEM to V-SEM	40% aggregate CIE marks in IV-SEM
		Passed in all the courses of I and II SEMs
		Must have secured at lest 50% of total credits prescribed for III and IV SEMs put together
5	V-SEM to VI-SEM	Regular course of study V-SEM 40% aggregate CIE marks in V-SEM
6	VI-SEM to VII-SEM	Regular course of study of VI SEM
		40% aggregate CIE marks in VI-SEM
		Passed in all the courses of III and IV SEMs
		Must have secured at least 50% of

		total credits prescribed for V and VI SEMs put together
7	VII-SEM to VIII-SEM	Regular course of study of VII SEM 40% aggregate CIE marks in VII SEM
8	Eligibility to appear VIII-SEM exams	Regular course of study of VIII SEM and 40% aggregate CIE marks in VIII-SEM

### III. Promotion rules for B.E(3 YDC) course (Lateral Entry)

S No	Semester/Class	Conditions to be fulfilled
1	III-SEM to IV-SEM	Regular course of study of III-SEM and 40% aggregate CIE marks in III-SEM
2	IV-SEM to V-SEM	Regular course of study of IV SEM 40% aggregate CIE marks in IV-SEM Must have secured at least 50% of total credits prescribed for III and IV SEMs put together
3	V-SEM to VI-SEM	Regular course of study V-SEM 40% aggregate CIE marks in V-SEM
4	VI-SEM to VII-SEM	Regular course of study of VI SEM 40% aggregate CIE marks in VI-SEM Passed in all the courses of III and IV SEMs Must have secured at least 50% of total credits prescribed for V and VI SEMs put together
5	VII-SEM to VIII-SEM	Regular course of study of VII SEM 40% aggregate CIE marks in VII SEM
6	Eligibility to appear VIII-SEM exams	Regular course of study of VIII SEM and 40% aggregate CIE marks in VIII-SEM

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**  
**SCHEME OF INSTRUCTION AND EXAMINATION (R-19)**  
**B.E. – CIVIL ENGINEERING : FIRST SEMESTER (2019 - 2020)**

B.E (Civil) I Semester								
Course Codee	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								
U19HS110EH	English Language and Communication – I	2	-	-	3	60	40	2
U19BS110MA	Engineering Mathematics – I	3	-	-	3	60	40	3
U19BS020PH	Applied Physics	3	1	-	3	60	40	4
U19ES110CS	Introduction to Programming	1	-	-	2	40	30	1
U19ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3
U19ES120CE	Engineering Graphics – I	1	-	2	3	60	40	2
PRACTICALS								
U19HS111EH	English Language and Communication Skills Lab–I	-	-	2	3	50	30	1
U19BS021PH	Applied Physics Lab	-	-	2	3	50	30	1
U19ES111ME	Engineering Workshop-I	-	-	2	3	50	30	1
Total		13	1	8	-	490	320	18
Grand Total		22				810		
Note: The left over hours are to be allotted to CC / RC / TC / PDC based on the requirement .								

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**  
**SCHEME OF INSTRUCTION AND EXAMINATION (R-19)**  
**B.E. – CIVIL ENGINEERING: FIRST SEMESTER (2019 - 2020)**

B.E I Semester									
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		
Course(s) Offered to CSE, IT									
U19ES030CE	Engineering Drawing	1	-	2	3	60	40	2	
Course(s) Offered to EEE, ECE, Mech.									
U19ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3	

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES**

ENGLISH LANGUAGE AND COMMUNICATION-I

(Common to all branches)

**SYLLABUS FOR B.E. 1/4 - I SEMESTER**

L: T: P (Hrs/Week):2	SEE Marks: 60	Course Code: <b>U19HS110EH</b>
Credits:2	CIE Marks: 40	Duration of SEE: 3 Hours

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
<b>The course will enable the students to:</b>	<b>On completion of the course, students will be able to</b>
1. Understand the role and importance of communication skills.	1. Greet and converse with friends, teachers, and strangers appropriately.
2. Realise the various features and functions of human language and communication, verbal and non-verbal.	2. Listen and respond to lectures, talks and take notes.
3. Comprehend the use of words in different contexts.	3. Use language functionally and participate in classroom interactions and in simulated situations replicating the real world.
4. Develop the habit of listening effectively to various speakers and lectures.	4. Read, comprehend, and answer questions on different types of texts and make notes.
5. Develop reading strategies in order to understand various types of texts.	5. Construct grammatically correct sentences for speaking and writing.

**UNIT-1 1.0 Effective communication**

**1.1** Role and Importance of language and communication; Functions of communication; Process of communication; Types of communication - formal and informal; verbal and nonverbal; Styles of communication; Channels of communication; Barriers to effective communication.

**UNIT-2 2.0 Listening and Speaking skills**

**2.1** Importance of listening in effective communication; Active listening

**2.2** Speaking skills: -Speaking strategies, Functions of oral communication- introducing a person and speaking about his/her

achievements, situational dialogues; telephone etiquette; poster-presentations.

### **UNIT-3 3.0 Reading and Writing skills**

**3.1** Sub-skills of Reading; Understanding the functions of different texts, Reading comprehension

#### **3.2 Written Communication: Styles**

- Describing events, people, places, objects.
- Defining.
- Providing examples or evidence.
- Writing introduction and conclusion.

##### **3.2.1 Written Communication: Features of Writing: -**

Importance of proper punctuation, creating coherence, organizing principles of paragraphs in documents, Techniques for writing precisely using appropriate phrases and clauses and linkers.

### **UNIT-4 4.0 Vocabulary Building and Grammar**

- Vocabulary Building:** The concept of Word Formation; Root words. Prefixes and suffixes; Synonyms, antonyms, and standard abbreviations. Homonyms, Homophones.
- Remedial English:** Articles, Prepositions; Tense and Aspect; Subject-Verb agreement; Connectives; Direct and Indirect Speech, Common errors.

### **UNIT-5 5.0 Reading skills and Comprehension**

**5.1** Prose text- In love with Rocket Science- India's Missile Woman.

**5.2** Poem- A psalm of life by Henry Wadsworth Longfellow.

#### **Learning Resources:**

1. E.Suresh kumar, P. Sreehari and J. Savithri - Essential English
2. Reading comprehension - Nuttal.J.C - Orient Blackswan
3. Sunitha Mishra. 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.

#### **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**

ENGINEERING MATHEMATICS-I

SYLLABUS FOR B.E I-SEMESTER

(Common to all branches)

L : T (Hrs./week): 3:0:0	SEE Marks:60	Course Code : <b>U19BS110MA</b>
Credits :3	CIE Marks :40	Duration of SEE : 3 Hours

<b>COURSE OBJECTIVES</b>		<b>COURSE OUTCOMES</b> <i>On completion of the course, students will be able to</i>	
1	Understand the Mean value theorems, concepts of curvature, radius of curvature evolutes and envelopes and to expand functions using Taylor's series.	1	Compute radius of curvature, evolute and envelope of a given curve and also to expand given function using Taylor's series.
2	Acquire knowledge of partial derivatives, and expand functions using Taylor's series functions of two real variables and, maxima-minima.	2	Expand a 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.
3	Study the concepts of vector differentiation, Gradient, Divergence and Curl.	3	Calculate the gradient and directional derivatives and Curl
4	Learn how to evaluate double and triple integrals, Change of order of integration and change of variables and vector integration and its applications..	4	Apply given double and triple integrals to evaluate area and volume and to use Green's theorem to evaluate line integrals, Stokes' theorem to give a physical interpretation of the curl of a vector field and the divergence theorem.
5	Understand infinite series, nature and various tests to check the nature of infinite series .	5	Identify the given series and apply an appropriate test to check its nature

**UNIT-I: Differential Calculus:** Introduction to Mean Value Theorems with Geometrical Interpretation(Without Proofs) - Taylor's Series – Expansion of functions on power series- Curvature- Radius of Curvature

(Cartesian and Parametric co-ordinates) – Center of Curvature –Evolutes – Envelopes of one parameter family of curves.

**UNIT-II: Multivariable Calculus:** 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 with and without constraints - 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: Vector Integral Calculus**

**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).

**UNIT-V: Infinite Series:** 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 40<sup>th</sup>. Edition, Khanna Publishers.
3. Advanced Engineering Mathematics 8<sup>th</sup> 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>

#### **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**  
**(CIVIL ENGINEERING BRANCH)**

**SYLLABUS FOR B.E.I-SEMESTER**

L:T:P(Hrs/week):3:1:0	SEE Marks:60	Course Code: <b>U19BS020PH</b>
Credits :04	CIE Marks:40	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
The students will be able to:	On completion of the course, students will be able to
1 learn mathematical formulations of waves and oscillations	1 solve differential equations that describe the behavior of mechanical oscillators under various conditions
2 Acquire knowledge of on various optical phenomenon like interference, diffraction etc.	2 apply the fundamental principles of wave optics in relevant fields of engineering.
3 gain insight on lasing action and lasers	3 List various types of lasers and their applications
4 grasp the concepts of acoustics	4 apply the principles of acoustics to minimize the reverberation and echo effects.
5 learn liquefaction of gasses	5 appreciate liquefaction of air & He and applications of low temperatures and their importance

**UNIT-I: OSCILLATIONS:** Definition of SHM, equation of motion and it solution to simple harmonic oscillator, time period of compound pendulum, energy of simple harmonic oscillator, equation of motion and it solution to damped harmonic oscillator, logarithmic decrement, energy of damped oscillator, relaxation time, equation of motion and it solution to forced harmonic oscillator, Resonance, Q-factor, sharpness, electromechanical analogy, Lissajous figures.

## **UNIT-II: WAVE OPTICS**

**Interference:** Light as an electromagnetic wave, superposition theorem, interference of light by wave front splitting and amplitude splitting, interference due to thin parallel film, Newton's rings, and its applications, Michelson interferometer.

**Diffraction:** Fraunhofer diffraction due to a single slit- diffraction due to N- slits (plane transmission grating) -Rayleigh criterion for limit of resolution, resolving power, dispersive power.

**Polarization:** Polarization of light, Brewster law, Malus law, double refraction, construction and working of Nicol's Prism. Polariser and analyser, Half shade Lorentz Polarimeter.

## **UNIT-III: LASERS AND OPTICAL FIBRES**

**Lasers:** induced absorption, spontaneous and stimulated emissions, Einstein's theory of matter radiation interaction- A and B coefficients; population inversion, meta-stable states, pumping mechanisms, components of laser, Properties of laser beams, construction and working of solid-state lasers: Ruby laser and Nd: YAG, Gas lasers: He-Ne and CO<sub>2</sub> laser, advantages and applications of lasers.

**Optical Fibers:** Total internal reflection, numerical aperture, acceptance angle, propagation of light in optical fibre, types of optical fibers based on refractive index and modes of propagation etc, light sources for optical fibre communication, various signal losses in optical fibers, Block diagram of optical communication system, advantages and application of optical fibers.

## **UNIT-IV: ACOUSTICS**

**Acoustics:** Characteristics of sound-pitch, loudness, timbre, Weber-Fechner law: measurement of intensity of sound -reverberation-reverberation time-Sabine's formula-remedies to reverberation- sound absorbent materials-absorption coefficient- conditions for good acoustics of a building-acoustic quieting: effects and remedies

**Ultrasonics:** Properties of ultrasonics, types of ultrasonic waves, production of ultrasonics by piezoelectric and magnetostriction methods, detection of ultrasonics by piezoelectric, Kundt's tube, flame test, thermal detector, acoustic grating: ultrasonic velocity measurements, applications of ultrasonics: SONAR, cavitation (cleaning), drilling, sonogram

## **UNIT-V: LOW TEMPERATURE PHYSICS**

Introduction to low temperature Physics- Porous plug experiment: Joule Thomson effect, Theory of porous plug experiment- J-K effect for a Van der Waal's gas, J-K effect for real gas, Inversion temperature, Boyle temperature, critical temperature and relationship between them. Regenerative cooling and cascade process, Liquefaction of air by Linde Process, liquefaction of hydrogen, Liquefaction of helium, Properties of cryogenic helium, adiabatic demagnetization, Applications of cryogenic liquids.

### **Learning Resources:**

1. A. P. French, Vibration's and Waves, CRC Press,2003
2. Lawrence E. Kinsler, Austin R. Frey, Alan B.Coppens and James V. Sanders Fundamentals of Acoustics 4<sup>th</sup> Edition, John Wiley,2009.
3. M.N. Avadhanulu and P.G. Kshirsagar and TVS Arun Murthy A Text Book Engineering Physics, 11<sup>th</sup> Edition, S. Chand,2018.
4. Senior, Optical Fiber Communications: Principles and Practice, 3e: Pearson,2010
5. Charles Kittel, Introduction to Solid State Physics, 7<sup>th</sup> Edition, John Wiley & Sons,2008.
6. Zeemansky, Heat and thermodynamics, Mc Graw Hill, 7<sup>th</sup> Edition,1981
7. B.K. Pandey and Chaturvedi, Engineering Physics, Cengage Learning,2016
8. V. Rajendran, Engineering Physics, Mc Graw-Hill Education, 2014

### **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 Test: 90 Minutes

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

**Department of Computer Science & Engineering**

**INTRODUCTION TO PROGRAMMING**

(Common to Mech. & Civil)

**SYLLABUS FOR B.E. I- SEMESTER**

L:T:P (Hrs./week):1:0:0	SEE Marks : 40	Course Code : <b>U19ES110CS</b>
Credits : 1	CIE Marks : 30	Duration of SEE : 2 Hours

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> On completion of the course, students will be able to
1 Identify components of the computer, and operating environments.	1 Demonstrate the basic knowledge of computer hard ware and soft ware.
2 Understand the steps in problem solving and formulation of flowcharts to problems.	2 Formulate solutions to problems and represent them using Flowcharts.
3 Understand the operators in C Programming language.	3 Develop and evaluate the expressions using operators.
	4 Develop programs using control statements.

**UNIT-I: Introduction to Computers and Problem Solving:**

Components of a Computer, Operating system, Compilers, Computer Languages, Program Development Environments, Creating and Running programs, Algorithm, Flowchart. Number Systems: Binary, Decimal, Octal, Hexadecimal and Conversions.

**UNIT-II: Introduction to C:** Introduction, Structure of C program, keywords, identifiers, Types, Variables, constants, Operators, Expressions, Precedence and Associativity, Type Conversion, Expression Evaluation.

**Conditional Control Statements:** Simple if, if-else, else if ladder, nested if and switch-case.

Introduction to Loop statements.

### **Learning Resources:**

1. YashavanthKanetkar, "Let us C", 16<sup>th</sup> Edition, BPB Publications, 2018.
2. BalagurusamyE, Programmingin ANSI C, 7<sup>th</sup>Edition, TMG, 2016.
3. ReemaTharaja "Introduction to C Programming", Second Edition, OXFORD Press, 2018.
4. J.R. Hanly and E.B. Koffman "Problem Solving and Program Design in C" , 7th Edition, Pearson Education, 2012.
5. PradeepDey and Manas Ghosh, "Programming in C", Oxford Press, 2nd Edition, 2017.
6. <https://www.tutorialspoint.com/cprogramming/index.htm>
7. <https://onlinecourses.nptel.ac.in/noc18-cs10/preview>

### **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 : 60 Minutes

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

**DEPARTMENT OF CIVIL ENGINEERING**  
**BASIC ENGINEERING MECHANICS**  
(Common to Civil, ECE, Mechanical & EEE)

**SYLLABUS FOR B.E. I SEMESTER**

L : T : P(Hrs./week):3 : 0 : 1	SEE Marks:60	Course Code: <b>U19ES010CE</b>
Credits : 3	CIE Marks:40	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
Objectives of this course are to:	At the end of the course, students will be able to:
<ol style="list-style-type: none"><li>1. Explain the resolution of a system of forces (coplanar, spatial, concurrent, non-concurrent) and compute their resultant.</li><li>2. Solve particle equilibrium problem using equation of equilibrium</li><li>3. Determine forces in the members of a truss</li><li>4. Perform analysis of bodies lying on rough surfaces.</li><li>5. Locate the centroid of a body and also compute the area moment of inertia of standard and composite sections.</li></ol>	<ol style="list-style-type: none"><li>1. Determine resultant of forces acting on a body.</li><li>2. Analyse equilibrium of a body subjected to a system of forces.</li><li>3. Perform analysis of trusses using method of joints and method of sections.</li><li>4. Solve problem of bodies subjected to friction.</li><li>5. Find the location of centroid and calculate moment of inertia and polar moment of inertia of a given section.</li></ol>

**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, 3<sup>rd</sup> Edition 2011.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., Jaan Kiusalaas., "Engineering Mechanics", Cengage Learning, 2014.
4. Beer F.P & Johnston E.R Jr. Vector "Mechanics for Engineers", TMH, 2004.
5. Hibbeler R.C & Ashok Gupta, "Engineering Mechanics", Pearson Education, 2010.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2008.
8. Meriam. J. L., "Engineering Mechanics", Volume-I Statics, John Wiley & Sons, 2008.
9. NPTEL Course ([www.nptel.ac.in](http://www.nptel.ac.in))
10. Virtual labs ([www.vlab.co.in](http://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 GRAPHICS-I

(Common to Civil, Mechanical & Electrical Engineering)

**SYLLABUS FOR B.E. I-SEMESTER**

L : T : P (Hrs./week):1:0 :2	SEE Marks:60	Course Code: <b>U19ES120CE</b>
Credits : 2	CIE Marks:40	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
Objectives of this course are to:	At the end of the course, students will be able to:
<ol style="list-style-type: none"><li>1. Impart skills of drawing instruments and their use to convey exact and complete information of any object.</li><li>2. Explore various scales in Engineering practice</li><li>3. Construct engineering curves.</li><li>4. Prepare orthographic projections of points, lines, planes and solids</li></ol>	<ol style="list-style-type: none"><li>1. Identify the qualities of precision and accuracy.</li><li>2. Convey technical information effectively through sketches / drawings.</li><li>3. Construct engineering curves with different methods.</li><li>4. Develop the conics using different methods, hypocycloidal and involutes.</li><li>5. Draw the orthographic projection of points, lines, planes and solids.</li></ol>

**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](http://www.nptel.ac.in))
9. Virtual labs ([www.vlab.co.in](http://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

(Common to CSE, IT)

**SYLLABUS FOR B.E. I-SEMESTER**

L : T : P (Hrs./week):1:0:2	SEE Marks:60	Course Code: <b>U19ES030CE</b>
Credits: 2	CIE Marks:40	Duration of SEE : 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
Objectives of this course are to:	At the end of the course, students will be able to:
<ol style="list-style-type: none"><li>1. Impart skills in using drawing instruments to convey exact and complete information of the object.</li><li>2. Construct conic sections and regular polygons.</li><li>3. Construct the orthographic projections of points, lines, planes and solids.</li><li>4. Draw sections and development of regular solids.</li><li>5. Visualize and construct isometric projections from orthographic projections of regular solids.</li></ol>	<ol style="list-style-type: none"><li>1. Acquire proficiency in instrumental drawing and will be able to visualize the object, draw conic sections and regular polygons.</li><li>2. Draw the orthographic projections of points, lines and planes.</li><li>3. Draw orthographic projections of regular and right solids</li><li>4. Draw the sections and development of regular solids</li><li>5. Visualise and draw the isometric view from the orthographic views of regular solids and combinations of solids.</li></ol>

**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](http://www.nptel.ac.in))
9. Virtual labs ([www.vlab.co.in](http://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-I

(COMMON TO ALL BRANCHES)

**SYLLABUS FOR B.E. 1/4 - I SEMESTER**

L:T : P(Hrs/Week):0:0:2	SEE Marks : 50	Course Code: <b>U19HS111EH</b>
Credits: 1	CIE Marks : 30	Duration of SEE : 3 Hours

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
<b>The course will enable the students to :</b>	<b>On completion of the course, students will be able to:</b>
1. Identify and describe phonemes in English.	1. Use language with appropriate pronunciation.
2. Learn the speech sounds and distinguish between vowel and consonant sounds in the English language.	2. Modify language, based on the context and situations. (formal and informal).
3. Reduce mother tongue influence when speaking English.	3. Participate effectively in group discussions and debates.
4. Understand and follow the rules in debates, group discussions, interviews and role plays.	4. Enact role plays.
5. Develop reading skills and analyse various text types.	5. Use language coherently.
6. Use dictionary for pronunciation and transcription of words.	6. Comprehend various text types.

**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 Sound System of English:** Phonetic sounds, Introduction to International Phonetic Alphabet;

The Syllable: Types of syllables, Transcription.

## **2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS**

### **2.1 Group discussion:**

Objectives of GD, Types of GDs; Initiating, Continuing, and concluding a GD. (Basic Level)

### **2.2 Debate:**

understanding the difference between a debate and a group discussion, essentials of debate, concluding a debate. (Basic Level)

### **2.3 Role Plays: -**

Use of structured and semi-structured dialogues in a variety of situations and settings.

### **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**

Viva questions will be asked in internal and external exams.

### **Prescribed textbook for laboratory:**

Speak Well: Jayshree Mohanraj, Kandula Nirupa Rani and Indira Babbellapati - Orient Black Swan

### **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.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
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Marks for assessment of each experiment	18
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Duration of Internal Test: 2 Hours

**VASAVI COLLEGE OF ENGINEERING(Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF PHYSICS**

APPLIED PHYSICSLAB

(CIVIL ENGINEERING BRANCH)

**SYLLABUS FOR B.E. I SEMESTER**

L:T:P(Hrs./week):0:0:3	SEE Marks:50	Course Code: <b>U19BS031PH</b>
Credits :01	CIE Marks:30	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> On completion of the course, students will be able to
1 Make precise measurements using basic physical principles and acquire skills to handle the instruments 2 Relates the theoretical Knowledge to the behavior of Practical Physical world. 3 Analyze errors in the experimental data. 4 Plot graphs between various physical parameters	1 Conduct experiments, take measurements independently. 2 Write appropriate laboratory reports. 3 Compute and compare the experimental results and draw relevant conclusions and interpret the results. 4 Use the graphical representation of data and estimate results from graphs

**List of the Experiments:**

1. Determination of characteristics of Semiconductorlasers.
2. Determination of radius of curvature of a given Plano-convex lens by forming Newton's Rings.
3. Determination of wavelength of spectral lines of Mercury light source using diffraction grating under normal incidence.
4. Calculation of numerical aperture, acceptance angle and power loss due to bending of an optical fibre.
5. Michelson's interferometer-determination of wavelength of laser light.



6. Study of I-V characteristics of solar cell and to calculate fill factor and efficiency
7. Temperature Characteristics of Thermistor and to find Thermistor constants
8. Melde's experiment
9. Fly Wheel –determination of moment of inertia.
10. Torsional Pendulum to calculate rigidity modulus of two wires of different materials
11. Compound Pendulum –determination of radius of gyration and acceleration due to gravity.
12. LCR series resonance circuit-determination of resonant frequency and band width
13. Gyroscope- study of gyroscopic effects.

From the above experiments, each student should perform at least 12 (Twelve) 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)**  
IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF MECHANICAL ENGINEERING**  
**ENGINEERING WORKSHOP-I**  
(COMMON TO MECHANICAL, CIVIL & EEE BRANCH)

**SYLLABUS FOR B.E.I-SEMESTER**

L:T:P(Hrs/week):0:0:2	SEE Marks:50	Course Code: <b>U19ES111ME</b>
Credits :01	CIE Marks:30	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> On completion of the course, students will be able to
1 know basic workshop processes, adopt safety practices while working with various tools	1 create models in Carpentry, plumbing, Electrical & Electronics and Sheet metal 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.
	3 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
4. Geyser connection(demo)

**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
4. LT Distribution with loads (Demo)

### **CARPENTRY**

1. Half-lap joint
2. Dove-tail joint
3. Bridle joint
4. Wood turning operation (demo)

### **SHEET METAL**

1. Rectangular box
2. Rectangular scoop with handle
3. Making a funnel with soldering
4. Making a T-Joint (Demo).

### **PLASTIC MOULDING**

1. Injection moulding of plastic spoon (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" 4<sup>th</sup> Edition, Pearson Education India Edition, 2002.
3. Gowri P., Hariharan and Suresh Babu A., "Manufacturing Technology-I", Pearson Education 2008.
4. P. Kannaiah & K. L. Narayana "Workshop manual" 2<sup>nd</sup> Ed., Scitech publications (I) Pvt. Ltd., Hyderabad.
5. B.L. Juneja, "Workshop Practice", Cengage Learning India Pvt. Limited, 2014.
6. [www.technologystudent.com](http://www.technologystudent.com)

No. of Internal Tests: 01 Max. Marks for Internal Test: 12

Marks for assessment day to day evaluation 18

Duration of Internal Test: 2 Hours

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**  
**SCHEME OF INSTRUCTION AND EXAMINATION (R-19)**  
**B.E. – CIVIL ENGINEERING : SECOND SEMESTER (2019 - 2020)**

B.E (Civil) II Semester								
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								
U19HS210EH	English Language and Communication – II	2	-	-	3	60	40	2
U19BS210MA	Engineering Mathematics – II	3	-	-	3	60	40	3
U19BS020CH	Applied Chemistry	3	1	-	3	60	40	4
U19ES210CS	Programming for Engineers	3	-	-	3	60	40	3
U19ES220CE	Engineering Graphics – II	1	-	2	3	60	40	2
U19ES210CE	Engineering Mechanics	3	-	-	3	60	40	3
PRACTICALS								
U19HS211EH	English Language and Communication Skills Lab–II	-	-	2	3	50	30	1
U19BS011CH	Chemistry Lab	-	-	2	3	50	30	1
U19ES211CS	Programming for Engineers Lab	-	-	2	3	50	30	1
U19ES271ME	Engineering Workshop-II	-	-	2	3	50	30	1
TOTAL		15	1	10		560	360	21
GRAND TOTAL		26				920		

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)**  
**SCHEME OF INSTRUCTION AND EXAMINATION (R-19)**  
**B.E. – CIVIL ENGINEERING : SECOND SEMESTER (2019 - 2020)**

B.E II Semester								
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	
Course(s) Offered to ECE, EEE								
U19ES030CE	Engineering Drawing	1	-	2	3	60	40	2
Course(s) Offered to CSE, IT								
U19ES010CE	Basic Engineering Mechanics	3	-	-	3	60	40	3

With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES**

ENGLISH LANGUAGE AND COMMUNICATION-II

(COMMON TO ALL BRANCHES)

**SYLLABUS FOR B.E. 1/4 - II SEMESTER**

L: T: P (Hrs/Week): 2	SEE Marks: 60	Course Code: <b>U19HS210EH</b>
Credits: 2	CIE Marks: 40	Duration of SEE: Hours: 3

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
<b>The course will enable the students to:</b>	<b>On completion of the course, students will be able to: -</b>
<ol style="list-style-type: none"><li>1. Identify words for use both in formal and informal contexts, to persuade and instruct and to inform.</li><li>2. Adapt and cooperate with people in varied contexts to function effectively, individually and in teams.</li><li>4. Communicate in interpersonal and intrapersonal contexts.</li><li>5. Read and write letters and essays etc. independently.</li><li>6. Write sustained piece of texts exhibiting qualities of coherence and cohesion.</li></ol>	<ol style="list-style-type: none"><li>1. Participate confidently in discussions both in the classroom and outside.</li><li>3. Work in teams, share ideas, agree and disagree politely.</li><li>3. Compose coherent letters, essays and resumes for varied situations.</li><li>5. Interpret and write a piece of text with coherence and cohesion.</li><li>5. Write paragraphs on any given topic following the rules of grammar and use appropriate vocabulary.</li></ol>

**UNIT-1 1.0 Interpersonal Communication**

**1.1 Johari Window**

**1.2 Team building skills and teamwork**

**1.3 Persuasion techniques**

**UNIT-2 2.0 Speaking skills**

**2.1 Speaking strategies: - Making Power Point Presentations (research-oriented topics)**

### **UNIT-3 3.0 Writing Practices**

- 3.1** Précis Writing
- 3.2** Essay Writing-General and Creative
- 3.3** Email-etiquette
- 3.4** Request letters
- 3.5** Application letters and resume

### **UNIT-4 4.0 Advanced Remedial English and Vocabulary: (In context)**

- 4.1** Grammar-Active and Passive Voice; Subject-Verb agreement
- 4.2** Vocabulary: - Words often confused, One-word substitutes; Collocations, Phrasal verbs; Idiomatic usage.

### **UNIT-5 5.0 Reading skills and Comprehension**

- 5.1** Getting acquainted with major type of questions
- 5.2 Prose** text- Shiva Ayyadurai- The Inventor of the e-mail.
- 5.3 Poem** by William Wordsworth - The World Is Too Much with Us

#### **Learning Resources:**

1. Essential English - E.Suresh Kumar, P. Sreehari, J. Savithri - Orient BlackSwan 2011.
2. Sunitha Mishra., C. Murali Krishna., Communication Skills for Engineers, Pearson, 2004.
3. Practical English Usage. Michael Swan. OUP. 1995.
4. Remedial English Grammar. F.T. Wood. Macmillan.2007
5. On Writing Well. William Zinsser. Harper Resource Book. 2001
6. Study Writing. Liz Hamp-Lyons and Ben Healy. Cambridge University Press. 2006.
7. Communication Skills. Sanjay Kumar and PushpLata. Oxford University Press. 2011. (vi) Exercises in Spoken English. Parts. I-III. CIEFL, Hyderabad. Oxford University Press

#### **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**

ENGINEERING MATHEMATICS-II

(COMMON TO ALL BRANCHES)

SYLLABUS FOR B.E.II-SEMESTER

L:T:P(Hrs./week): 3:0:0	SEE Marks :60	Course Code : <b>U19BS210MA</b>
Credits :3	CIE Marks :40	Duration of SEE : 03 Hours

COURSE OBJECTIVES	COURSE OUTCOMES <i>On completion of the course, students will be able to</i>
<p>1 <b>Study</b> the concepts of matrices, Eigen values and Eigen vectors, Diagonalization and canonical form of a quadratic form.</p> <p>2 <b>Solve</b> various first order differential equations using various elementary techniques and learn its applications.</p> <p>3 <b>Solve</b> various Higher order homogeneous and non-homogeneous differential equations with constant and variable coefficients and applications.</p> <p>4 <b>Understand</b> the Analytic functions, conditions and harmonic functions.</p>	<p>1 <b>Find</b> rank of a given matrix, diagonalize a given matrix and reduce a quadratic form to canonical form and find its nature.</p> <p>2 <b>Identify</b> the differential equations and solve them, model the real time electrical engineering problems viz., RC Circuits into differential equations and solve.</p> <p>3 <b>Solve</b> various higher order Linear Differential Equations, model the real time electrical engineering problems viz., LC and LCR circuits into differential equations and solve them by using the various applicable techniques learnt.</p> <p>4 Apply the condition(s) for a complex variable function to be analytic and/or harmonic and to construct an Analytic function.</p>
<p>5 <b>Evaluate</b> a line integral of a function of a complex variable using Cauchy's integral formula, and how to evaluate Taylor's and Laurent Series.</p>	<p>5 Apply Cauchy's theorem and Cauchy's Integral formula to evaluate complex integrals and define singularities of a function, know the different types of singularities and to expand a given function as a Taylor's / Laurent's series.</p>



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

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

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

**UNIT-IV: Complex Variables (Differentiation):** 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: Complex Integration:** 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 Resources:**

1. Advanced Engineering Mathematics 3<sup>rd</sup> 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, 8<sup>th</sup> Edition by Erwin Kreyszig , John Wiley & Sons, Inc.
6. Ordinary and Partial Differential equations, by M.D.Raisinghania, S.Chand & Company Ltd.,1997.
7. Complex Variables and applications, J.W.Brown and R.V.Churchill, 7<sup>th</sup> Edition, Tata Mc Graw Hill,2004.
8. <http://tutorial.math.lamar.edu/Classes/DE/DE.aspx>

9. <http://mathworld.wolfram.com/topics>

10. <http://www.nptel.ac.in/course.php>

**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

With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF CHEMISTRY**

APPLIED CHEMISTRY

(COMMON TO CIVIL & MECHANICAL BRANCHES)

**SYLLABUS FOR B.E.II SEMESTER**

L : T : P (Hrs./week):3:1:0	SEE Marks :60	Course Code : <b>U19BS020CH</b>
Credits :4	CIE Marks :40	Duration of SEE :3 Hours

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> <i>On completion of the course, students will be able to</i>
1. To study variation of conductance, electrode potential and emf with change in concentration, temperature and to acquaint with applications of galvanic cells.	1. Construct a galvanic cell and calculate its EMF and pH wherever applicable.
2. To classify and compare various types of batteries.	2. Describe the construction, functioning and applications of the selected primary, secondary batteries and fuel cells.
3. Discuss the difference types of polymers with their applications	3. Categorise the polymers and discuss the synthesis of a few polymers and their applications.
4. Emphasis upon the quantity, quality of fossil fuels and exposes to different high energy materials.	4. Rate the fuels and suggest methods for enhancement of the quality of fuels for the required output and explain the methods of preparation and applications of high energy materials namely Lead azide, TNT, Nitro glycerine and RDX.
5. Describe the requirements of water for domestic & industrial applications and the behaviour of composition of heterogeneous equilibria.	6. Suggest appropriate treatment methods of water to make it fit for domestic and industrial applications and apply the principle of phase rule to heterogeneous equilibria.

**UNIT-I: ELECTROCHEMISTRY:** Introduction, conductance, types of conductance- specific, equivalent, molar conductance and their interrelationship- numericals. Ionic mobility and transport number- definition, determination by Hittorfs method (Non attackable electrodes) 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, electromotive 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. Applications of potentiometry- acid base and redox titration (Fe(II) Vs  $\text{KMnO}_4$ ).

**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, secondary and fuel cells.

Primary batteries: Construction and electrochemistry of  $\text{Ag}_2\text{O}$ -Zn battery and lithium- $\text{V}_2\text{O}_5$  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 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) Phenol-formaldehyde (Bakelite) c) PVC

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

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

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

**Conducting polymers:** Definition- classification, mechanism of conduction in polyacetylene and applications.

#### **UNIT-IV-CHEMICAL FUELS AND HIGH ENERGY MATERIALS**

**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 volume- weight and weight-weight methods.

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

**Liquid Fuels:** Fractions of crude oil, 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, advantages of bio diesel.

**Rocket Propellants-** Principle of rocket propulsion, classification, characteristics of good propellants.

**High energy materials-** Introduction, classification, precautions during storage, characteristics of explosives (oxygen balance-numericals) preparation of lead azide, TNT, Nitro glycerine and RDX.

**UNIT-V: WATER TECHNOLOGY AND PHASE RULE:** Hardness of water- type. 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-Calgonconditioning.

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, Pattinson's process, Eutectics and their applications in safety fuses and solders.

### Learning Resources:

1. PC Jain, M Jain Engineering Chemistry, Dhanapathi Rai and sons (16<sup>th</sup> edition), New Delhi.
2. Sashi Chawla, Text book of Engineering Chemistry, hanapathi Rai & sons, New Delhi.
3. 3. O.G. PALANNA, Engineering Chemistry, TMH Edition.
4. Wiley Engineering chemistry, Wiley India pvt Ltd, II edition.
5. Chemistry in engineering and technology by J.C. Kuriacose and Rajaram. University chemistry, by B. H. Mahan
6. Engineering Chemistry (NPTEL Web-book), by B. L. Tembe, Kamaluddin and M. S. Krishnan
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. NPTEL Polymer Chemistry Course, D. Dhara, IIT Kharagpur.
11. Polymer chemistry by Gowariker

### 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 : 90Minutes

With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

PROGRAMMING FOR ENGINEERS

(COMMON TO MECH. & CIVIL)

**SYLLABUS FOR B.E. II-SEMESTER**

L:T:P (Hrs./week): 3:0:0	SEE Marks : 60	Course Code: <b>U19ES210CS</b>
Credits : 3	CIE Marks : 40	Duration of SEE : 3 Hours

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> <i>On completion of the course, students will be able to</i>
1 Acquire problem solving skills.	1 Apply decision making, looping constructs and functions to develop programs for a given problem.
2 Understand the usage of arrays, structures, functions, pointers and memory management concepts.	2 Store data using arrays and perform searching and sorting operations on the data.
3 Learn the advantages of user defined data types and write programs in C.	3 Design programs on string handling and operations on arrays using dynamic memory management techniques. 4 Develop programs to store data and perform operations using structures and files.

**UNIT–I: Control statements:** Statements, Conditional Control statements: simple if, if-else, else if ladder, nested if and switch – case. Loop Control statements: for, while and do-while. Nesting of loops, Unconditional control statements: break, continue, goto; basic programs using control statements.

**UNIT –II: Functions:** Introduction, Function declaration, Function call and Function definition. Passing parameters to functions. Storage classes- auto, register, static and extern. Recursion, simple programs using functions.

**UNIT – III: Arrays:** 1-Dimensional array: Introduction, Sorting - selection and Bubble sort. Searching - linear and binary search . 2-Dimensional arrays: introduction, matrix operations – addition, subtraction, multiplication.

Built-in Character handling functions.

**Strings:** Input and Output operations using scanf(), printf(), gets(), puts() .String operations - strlen(), strcpy(), strcat(), strcmp(), strlwr(),strupr(), strrev()); basic programs using arrays.

**UNIT – IV: Pointers:** Introduction to pointers, call by reference.

**Structures:** Structure definition, initialization and accessing the members of a structure, nested structures, passing structure to a function, unions.

**UNIT-V: Files:** Introduction to files, file operations, reading data from files, writing data to files. Basic programs using structures and files.

**Pre-processor Directives:** Types of pre-processor directives, examples.

### Learning Resources:

1. YashavanthKanetkar, "Let us C", 16<sup>th</sup> Edition, BPB Publications, 2018.
2. BalagurusamyE, Programmingin ANSI C, 7<sup>th</sup>Edition, TMG, 2016.
3. ReemaTharaja "Introduction to C Programming", Second Edition, OXFORD Press, 2018.
4. J.R. Hanly and E.B. Koffman "Problem Solving and Program Design in C" , 7th Edition, Pearson Education, 2012.
5. PradeepDey and Manas Ghosh, "Programming in C", Oxford Press, 2nd Edition, 2017.
6. <https://www.tutorialspoint.com/cprogramming/index.htm>
7. <https://onlinecourses.nptel.ac.in/noc18-cs10/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



With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF CIVIL ENGINEERING**

ENGINEERING GRAPHICS-II

(COMMON TO CIVIL, MECHANICAL & ELECTRICAL ENGINEERING)

**SYLLABUS FOR B.E. II SEMESTER**

L:T:P (Hrs./week): 1:0:2	SEE Marks: 60	Course Code: <b>U19ES220CE</b>
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:
<ol style="list-style-type: none"><li>1. Explain the principles involved in Section of simple solids</li><li>2. Develop surfaces of simple solids</li><li>3. Explain intersection of cylinder with cylinder and cylinder with cone</li><li>4. Differentiate between isometric view and isometric projection</li><li>5. Draw orthographic views from pictorial views</li></ol>	<ol style="list-style-type: none"><li>1. Draw sectional views of simple solids</li><li>2. Develop the lateral surfaces of simple solids</li><li>3. Prepare orthographic views of intersection of solids.</li><li>4. Visualize isometric view of simple planes, solids and combined solids</li><li>5. Construct orthographic views of simple objects from their pictorial views</li></ol>

**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](http://www.nptel.ac.in))
9. Virtual labs ([www.vlab.co.in](http://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

(COMMON TO CIVIL, MECHANICAL & EEE)

**SYLLABUS FOR B.E. II-SEMESTER**

L:T:P (Hrs./week): 3:0:0	SEE Marks: 60	Course Code: <b>U19ES210CE</b>
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:
<ol style="list-style-type: none"><li>1. Determine the mass moment of inertia and product of inertia of standard and composite sections.</li><li>2. Understand the concepts of dynamics and its principles.</li><li>3. Explain kinetics and kinematics of particles, projectiles, curvilinear motion, centroidal motion and plane motion of rigid bodies.</li><li>4. Impart the concepts of work-energy method and its applications to translation, rotation and plane motion.</li><li>5. Impart the concept of impulse momentum relation</li></ol>	<ol style="list-style-type: none"><li>1. Compute mass moment of inertia and product of inertia of standard and composite section.</li><li>2. Distinguish between statics and dynamics and differentiate between kinematics and kinetics.</li><li>3. Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion.</li><li>4. Solve problems using work energy equations for translation, fixed axis rotation and plane motion.</li><li>5. Solve problems using impulse momentum equation</li></ol>

**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, 3<sup>rd</sup> Edition 2011.
2. Timoshenko S.P and Young D.H., "Engineering Mechanics", McGraw Hill International Edition, 1983.
3. Andrew Pytel, Jaan Kiusalaas, "Engineering Mechanics", Cengage Learning, 2014.
4. Beer F.P & Johnston E.R Jr. Vector, "Mechanics for Engineers", TMH, 2004.
5. Hibbeler R.C & Ashok Gupta, "Engineering Mechanics", Pearson Education, 2010.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.
7. Basudeb Bhattacharyya, "Engineering Mechanics", Oxford University Press, 2008.
8. Meriam. J. L., "Engineering Mechanics", Volume-II Dynamics, John Wiley & Sons, 2008.
9. NPTEL Course ([www.nptel.ac.in](http://www.nptel.ac.in))
10. Virtual labs ([www.vlab.co.in](http://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

With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF CIVIL ENGINEERING**

ENGINEERING DRAWING

(Common to ECE & EEE)

**SYLLABUS FOR B.E. II-SEMESTER**

L : T : P (Hrs./week):1:0 : 2	SEE Marks:60	Course Code: <b>U19ES030CE</b>
Credits: 2	CIE Marks:40	Duration of SEE : 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
Objectives of this course are to:	At the end of the course, students will be able to:
<ol style="list-style-type: none"><li>1. Impart skills in using drawing instruments to convey exact and complete information of the object.</li><li>2. Construct conic sections and regular polygons.</li><li>3. Construct the orthographic projections of points, lines, planes and solids.</li><li>4. Draw sections and development of regular solids.</li><li>5. Visualize and construct isometric projections from orthographic projections of regular solids.</li></ol>	<ol style="list-style-type: none"><li>1. Acquire proficiency in instrumental drawing and will be able to visualize the object, draw conic sections and regular polygons.</li><li>2. Draw the orthographic projections of points, lines and planes.</li><li>3. Draw orthographic projections of regular and right solids</li><li>4. Draw the sections and development of regular solids</li><li>5. Visualise and draw the isometric view from the orthographic views of regular solids and combinations of solids.</li></ol>

**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](http://www.nptel.ac.in))
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**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			

With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF CIVIL ENGINEERING**

**BASIC ENGINEERING MECHANICS**

(Common to CSE & IT)

**SYLLABUS FOR B.E. II SEMESTER**

L:T:P (Hrs./week):3:0:0	SEE Marks:60	Course Code: <b>U19ES010CE</b>
Credits : 3	CIE Marks:40	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
Objectives of this course are to:	At the end of the course, students will be able to:
<ol style="list-style-type: none"><li>1. Explain the resolution of a system of forces (coplanar, spatial, concurrent, non-concurrent) and compute their resultant.</li><li>2. Solve particle equilibrium problem using equation of equilibrium</li><li>3. Determine forces in the members of a truss</li><li>4. Perform analysis of bodies lying on rough surfaces.</li><li>5. Locate the centroid of a body and also compute the area moment of inertia of standard and composite sections.</li></ol>	<ol style="list-style-type: none"><li>1. Determine resultant of forces acting on a body.</li><li>2. Analyse equilibrium of a body subjected to a system of forces.</li><li>3. Perform analysis of trusses using method of joints and method of sections.</li><li>4. Solve problem of bodies subjected to friction.</li><li>5. Find the location of centroid and calculate moment of inertia and polar moment of inertia of a given section.</li></ol>

**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, 3<sup>rd</sup> Edition 2011.
2. Timoshenko S.P and Young D.H "Engineering Mechanics", McGraw Hill International Edition, 2017
3. Andrew Pytel., Jaan Kiusalaas., "Engineering Mechanics", Cengage Learning, 2014.
4. Beer F.P & Johnston E.R Jr. Vector "Mechanics for Engineers", TMH, 2004.
5. Hibbeler R.C & Ashok Gupta, "Engineering Mechanics", Pearson Education, 2010.
6. Tayal A.K., "Engineering Mechanics – Statics & Dynamics", Umesh Publications, 2011.
7. Basudeb Bhattacharyya., "Engineering Mechanics", Oxford University Press, 2008.
8. Meriam. J. L., "Engineering Mechanics", Volume-I Statics, John Wiley & Sons, 2008.
9. NPTEL Course ([www.nptel.ac.in](http://www.nptel.ac.in))
10. Virtual labs ([www.vlab.co.in](http://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



With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES**  
**ENGLISH LANGUAGE AND COMMUNICATION SKILLS LABORATORY-II**  
**(COMMON TO ALL BRANCHES)**

**SYLLABUS FOR B.E. 1/4 - II SEMESTER**

L:T:P (Hrs/Week) :0:0:2	SEE Marks: 50	Course Code: <b>U19HS211EH</b>
Credits: 1	CIE Marks: 30	Duration of SEE: Hours: 3

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b>
<b>The course will enable the students to: -</b>	<b>On completion of the course, students will be able to:</b>
1. Use language effectively without mother - tongue influence.	1. Pronounce words in isolation as well as in spoken discourse.
2. Converse in various situations.	2. Research and sift information to make presentations.
3. Make poster and power point presentations.	3. Comprehend the tone and tenor of various types of speeches from media and classroom lectures.
4. Listen to audio clippings, exchange dialogues and write short texts.	4. Listen for gist and make inferences from various speeches.
5. Speak effectively using discourse markers.	5. Identify connectives and transitions in various speeches.
6. Read and understand various forms of texts and review them.	6. Use connectives and make transitions effectively while speaking.

**1.0 PHONETICS LAB- TOPICS**

**1.1 Aspects of Connected Speech:**

Passages and dialogue reading.

**1.2 Word Stress:**

Rules of Word stress and Sentence stress

**1.3 Rhythm and Intonation:**

Introduction to rhythm and intonation; Major patterns of intonation in English with their semantic implications. Transcription.

Viva questions will be asked in internal and external exams.

## **2.0 INTERACTIVE COMMUNICATION SKILLS LAB-TOPICS (Advanced Level)**

### **2.1 Public Speaking:**

Advantages of public speaking, essentials of an effective speech, researching, planning and delivering a speech.

### **2.2 Presentation Skills:**

Making Effective Presentations, Expressions which can be used in Presentations, Use of Non-verbal communication, Coping with stage-fright, Handling Question and Answer Session; Use of Audio-Visual Aids, PowerPoint Presentations.

### **2.3 Interview skills-**

Do's and Don'ts, Handling difficult questions, dress code and code of conduct. Viva questions will be asked in internal and external exams.

## **3.0 READING SKILLS LAB**

### **Study Skills:**

Use of Dictionary and the thesaurus for vocabulary building.

Teaching different types of texts for comprehension

Viva questions will be asked in internal and external exams.

### **Prescribed textbook for laboratory:**

Speak Well: Jayshree Mohanraj, Kandula Nirupa Rani and Indira Babbellapati - Orient BlackSwan.

### **Learning Resources:**

1. T. 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.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test:	2 Hours		

With effect from the Academic Year 2019-20

**VASAVI COLLEGE OF ENGINEERING (Autonomous)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF CHEMISTRY**

CHEMISTRY LAB

(COMMON FOR ALL BRANCHES)

**SYLLABUS FOR B.E. I/II SEMESTER**

L:T:P(Hrs./week):0:0:3	SEE Marks:50	Course Code: <b>U19BS011CH</b>
Credits :01	CIE Marks:30	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> <i>On completion of the course, students will be able to</i>
1. To describe the conventional quantitative analytical techniques.	1. Determine the amount of metals in the given solutions.
2. Learn the working principles of instruments.	2. Analyse the hardness, alkalinity and chloride content of a given water sample.
3. To familiarise preparation method of few compounds.	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.
	5. Synthesize a polymer.

**List of the Experiments:**

1. Preparation of standard FAS or oxalic acid solution and standardization of  $\text{KMnO}_4$  or  $\text{NaOH}$  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 ( $\text{HCl}$  /  $\text{NaOH}$  and  $\text{CH}_3\text{COOH}$  /  $\text{NaOH}$ ).
9. Conductometric acid-base titrations- Determination of strength of acids in a given mixture of acids ( $\text{HCl}$  and  $\text{CH}_3\text{COOH}$  /  $\text{NaOH}$ )
10. Determination of strength of a given acid by Potentiometry.
11. Determination of concentration of a given  $\text{FeSO}_4$  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. 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, Experimenta in applied chemistry, S K Kataria & Sons (2010)
4. A text book on experiments and calculation Engg. S.S. Dara.

From the above experiments, each student should perform at least 12 (Twelve) 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)**

IBRAHIMBAGH, HYDERABAD – 500 031

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

PROGRAMMING FOR ENGINEERS LAB

**SYLLABUS FOR B.E. II-SEMESTER**

(Common to Mech. & Civil)

L:T:P (Hrs./week):0:0:2	SEE Marks : 50	Course Code: <b>U19ES211CS</b>
Credits : 1	CIE Marks : 30	Duration of SEE : 3 Hours

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> <i>On completion of the course, students will be able to</i>
1 Write, compile and debug programs in C.	1 Choose appropriate data type for implementing programs in C language.
2 Formulate solution to problems and implement in C.	2 Design and implement modular programs involving input output operations, decision making and looping constructs.
3 Effectively choose programming components to solve computing problems.	3 Implement search and sort operations on arrays.
	4 Implement programs on string handling.
	5 Design and implement programs to store data in structures and files.

**Programming Exercise:**

1. Finding maximum and minimum of given set of numbers.
2. Finding roots of a quadratic equation.
3. Basic calculator program using switch-case statement.
4. Sin x and Cos x values using series expansion.
5. Conversion of binary to decimal, octal, hexadecimal and vice versa.

6. Generating pyramid of numbers.
7. Recursion: factorial, Fibonacci.
8. Bubble sort and selection sort.
9. Linear search and binary search.
10. Generating Pascal's triangle using arrays.
11. Matrix addition, multiplication and transpose using arrays.
12. String copy, palindrome, concatenation .
13. Programs on structures and unions.
14. Finding the number of characters, words and lines of given text file.
15. File handling programs.

### Learning Resources:

1. Yashavanth Kanetkar, "Let us C", 16<sup>th</sup> Edition, BPB Publications, 2018.
2. Balagurusamy E, Programming in ANSI C, 7<sup>th</sup> Edition, TMG, 2016.
3. Reema Tharaja "Introduction to C Programming", Second Edition, OXFORD Press, 2016.
4. J.R. Hanly and E.B. Koffman "Problem Solving and Program Design in C", 7<sup>th</sup> Edition, Pearson Education, 2012.
5. Pradeep Dey and Manas Ghosh, "Programming in C", Oxford Press, 2<sup>nd</sup> Edition, 2017.
6. <https://www.tutorialspoint.com/cprogramming/index.htm>
7. <https://onlinecourses.nptel.ac.in/noc18-cs10/preview>.

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment of each experiment			18
Duration of Internal Test:	2 Hours		

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

**Department of Mechanical Engineering**

**ENGINEERING WORKSHOP-II**  
SYLLABUS FOR B.E.II-SEMESTER  
(Mechanical, Civil & EEE Branch)

L:T:P(Hrs/week):0:0:2	SEE Marks:50	Course Code: <b>U19ES221ME</b>
Credits :01	CIE Marks:30	Duration of SEE: 3 Hrs

<b>COURSE OBJECTIVES</b>	<b>COURSE OUTCOMES</b> <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
4. Fullering Operation (demo)

**WELDING**

1. Bead formation using arc welding
2. Butt joint & T joint using arc welding
3. Lap joint using gas welding`
4. Spot welding (demo)

## **FITTING**

1. Template fitting (square fit)
2. V-groove fit
3. Drilling and Tapping
4. Assembly of pulley on a shaft with key (demo)

## **MACHINING**

1. Plain turning and step turning
2. Taper turning
3. Thread cutting
4. 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" 4<sup>th</sup> Edition, Pearson Education India Edition, 2002.
3. Gowri P., Hariharan and Suresh Babu A., "Manufacturing Technology-I", Pearson Education 2008.
4. P. Kannaiah & K. L. Narayana "Workshop manual" 2<sup>nd</sup> Ed., Scitech publications (I) Pvt. Ltd., Hyderabad.
5. B.L. Juneja, "Workshop Practice", Cengage Learning India Pvt. Limited, 2014.
6. [www.technologystudent.com](http://www.technologystudent.com)
7. [www.mewelding.com](http://www.mewelding.com)

No. of Internal Tests:	01	Max. Marks for Internal Test:	12
Marks for assessment for day to day evaluation			18
Duration of Internal Test:	2 Hours		