Dr. Ambedkar Institute of Technology, Bangalore
An Autonomous Institution
Affiliated to Visvesvaraya Technological University, Belagavi
Aided by Govt, of Karnataka

SYLLABUS BOOK
2020-21
B.E. I & II SEMESTER
COMMON TO ALL BRANCHES

I SEMESTER B.E (PHYSICS GROUP)

#	Course and Course Code		Course Title	Teaching Department	Paper Setting Board	Teaching Hours /Week			Examination					Credits
						Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks		
						L	T	P						
1	BC	18MA11	Calculus and Linear Algebra	Mathematics	Science	3	2	--	3	50	50	100		4
2	BC	18PH12	Engineering Physics	Physics	Science	3	2	--	3	50	50	100		4
3	ES	18EE13	Basic Electrical Engineering	E and E Engineering	E and E Engineering	2	2	--	3	50	50	100		3
4	ES	18CV14	Civil Engineering and Mechanics	Civil Engineering	Civil Engineering	2	2	--	3	50	50	100		3
5	ES	18MEL15	Computer Aided Engineering Drawing	ME	Mechanical Engineering	2	--	2	3	50	50	100		3
6	BC	18PHL16	Engineering Physics Laboratory	Physics	Science	--	--	2	3	50	50	100		1
7	ES	18EEL17	Basic Electrical Engineering Laboratory	E and E Engineering	E and E Engineering	--	--	2	3	50	50	100		1
8	HS	18HS11/ 18HS12	English / Kannada	Humanities	Humanities	1	--	2	2	50	50	100		1
9	HS	18HS13	Career Development Skills	Humanities	Humanities	2	--	--	2	50	--	50		--
					TOTAL	15	8	8	25	450	400	850		20

I SEMESTER B.E (CHEMISTRY GROUP)

#	Course and Course Code		Course Title	Teaching Department	Paper Setting Board	Teaching Hours /Week			Examination					
						Theory Lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
						L	T	P					
1	BC	18MA11	Calculus and	Mathematics	Science	3	2	--	3	50	50	100	4
2	BC	18CH12	Engineering	Chemistry	Science	3	2	--	3	50	50	100	4
3	ES	18CS13	C Program	CSE	CSE	2	2	--	3	50	50	100	3
4	ES	18EC14	Basic Electroni	EC/E and I/ TE	E and C	2	2	--	3	50	50	100	3
5	ES	18ME15	Elements of	ME	Mechanical	2	2	--	3	50	50	100	3
6	BC	18CHEL16	Engineering	Chemistry	Science	--	--	2	3	50	50	100	1
7	ES	18CSL17	Computer Program	CSE	CSE	--	--	2	3	50	50	100	1
8	HS	18HS11/	English / Kannada	Humanities	Humanities	1	--	2	2	50	50	100	1
9	HS	18HS13	Career Development	Humanities	Humanities	2	--	--	2	50	--	50	--
					TOTAL	15	10	06	23	450	400	850	20

II SEMESTER B.E (PHYSICS GROUP)

#		Course and Course Code	Course Title	Teaching Department	Paper Setting Board	Teaching Hours /Week			Examination				
						Theory	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits
						L	T	P					
1	BC	18MA21	Differential	Mathematics	Science	3	2	--	3	50	50	100	4
2	B	18PH2	Engineer	Physics	Science	3	2	--	3	50	50	100	4
3	ES	18EE23	Basic Electrical	E and E	E and E	2	2		3	50	50	100	3
4	ES	18CV24	Civil Engineer	Civil	Civil	2	2	--	3	50	50	100	3
5	ES	18MEL25	Computer Aided	Mechanical	Mechanical	2		2	3	50	50	100	3
6	BC	18PHL26	Engineering	Physics	Science	--	--	2	3	50	50	100	1
7	ES	18EEL27	Basic Electrical	E and E	E and E	--	--	2	3	50	50	100	1
8	HS	18HS21/	English / Kannada	Humanities	Humanities	1	--	2	2	50	50	100	1
9	H	18HS2	Soft	Humaniti	Humanit	2	--	--	2	50	--	50	--
					TOTAL	15	8	8	25	450	400	850	20

Note: BC: Science Course, ES: Engineering Science, Hu: Humanity and Social Science.	
Definition of Credit:	1 hour Lecture (L) per week per semester =1 Credit
	2 hour Tutorial (T) per week per semester =1 Credit
	2 hour Practical/Laboratory/Drawing (P) per week per semester =1 Credit.

#	Course and Course Code		Course Title	Teaching Department	Paper Setting Board	Teaching Hours /Week			Examination					Credits
						Theory lecture	Tutorial	Practical/ Drawing	Duration in hours	CIE Marks	SEE Marks	Total Marks		
						L	T	P						
1	B C	18MA 21	Differenti al	Mathem atics	Science	3	2	--	03	50	50	100		4
2	B	18CH	Engineeri	Chemistr	Science	3	2	--	03	50	50	100		4
3	E S	18CS2 3	Program ming for	CS	CS	2	2	--	03	50	50	100		3
4	E	18ELN	Basic	EC/EI/ TE	E and C	2	2	--	03	50	50	100		3
5	E S	18ME 25	Elements of	Mechani cal	Mechani cal	2	2	--	03	50	50	100		3
6	B C	18CHL 26	Engineeri ng	Chemistr y	Science	--	--	2	03	50	50	100		1
7	E S	18CSL 27	Compute r	CS	CS	--	--	2	03	50	50	100		1
8	H U	18HS2 1/	English / Kannada	Humaniti es	Humanit ies	1	--	2	2	50	50	100		1
9	H S	18HS2 3	Soft Skills	Humaniti es	Humanit ies	2	--	--	2	50	--	50		--
					TOTAL	15	10	6	25	450	400	850		20

II SEMESTER B.E (CHEMISTRY GROUP)

Note: BS: Science Course, ES: Engineering Science, Hu: Humanity and Social Science.	
Definition of Credit:	1 hour Lecture (L) / week / semester =1 Credit ; 2 hour Tutorial (T) per week per semester =1 Credit ; 2 hour Practical/Laboratory/Drawing (P) per week per semester =1 Credit.

For FIRST Semester B E (Common to all branches)

	SUBJECT TITLE: CALCULUS & LINEAR ALGEBRA		
	Subject Code : 18MA11	**Number of Credits: 4 = 3 : 1 : 0** (L–T– P)	**No of lecture hours per week: 05 (L=3+T=2)**
	Exam Duration : 3 Hrs	**Exam Marks: CIE + Assignment + SEE = 40 + 10 + 50 = 100**	**Total No. of lecture hours: 65 (L=41+T=24)**

Course objective: This course is intended to impart to the students the skills of employing the basic tools of differential, integral and vector calculus and linear algebra for solving basic and difficult engineering problems.

Unit No.	Syllabus content	No. of hours	
		Theory	Tutorial
1	**Differential Calculus:** Radius of curvature–in Cartesian, parametric and polar forms (without proof). Taylor's and Maclaurin's series expansions (without proof) for functions of single variable. Partial Differentiation: Definition. Total derivatives, differentiation of composite functions. Jacobian-problems. Applications-Maxima and minima of functions of two variables, Lagrange's method of undetermined multipliers with one subsidiary condition.	**10**	**06**
2	**Integral Calculus:** Multiple Integrals: Double integrals, evaluation by change of order of integration and by changing to polar co-ordinates. Applications to find area and volume. Triple integrals-simple applications involving cubes, sphere and rectangular parallelopiped. Beta and Gamma functions: Definition, relation between them –simple problems.	**10**	**06**
3	**Vector Calculus:** Scalar and vector point functions, Gradient of a scalar field, directional derivative, divergence and curl of a vector field. Vector identities (without proof). Vector integration-Green's theorem in the plane, Stoke's and Gauss Divergence theorem (without proof). Applications: work done by force and flux.	**11**	**06**
4	**Linear Algebra:** Rank of a matrix, determination of rank by elementary transformation (Echelon and normal forms). Consistency of a system of linear homogeneous and non-homogeneous equations. Gauss elimination and Gauss–Jordan methods. Eigenvalues and eigenvectors, properties (no proof), Diagonalization of matrices – of order two.	**10**	**06**

Course Outcomes: After the successful completion of the course, the students are expected to:

CO1: apply the basic concepts of calculus like differentiation and integration for problem solving.

CO2: use the idea of gradient, divergence and curl involved in vector fields to analyze and solve problems arising in engineering fields.

CO3: identify the practical importance of Maxima and minima of functions of two variables.

CO4: apply the concepts in problem solving and relate the solutions to practical situations in various engineering streams.

CO5: assess the concepts of linear algebra and their applications in various fields of engineering.

Course Outcomes (CO) Mapping with Programme Outcomes (PO)
CO1: PO1, PO2
CO2: PO1, PO2
CO3: PO1, PO2
CO4: PO1, PO4
CO5: PO1, PO2

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics (44th Edition), Khanna Publishers, New Delhi.
2. B.V. Ramana, Higher Engineering Mathematics, Tata McGraw Hill publications, New Delhi, 11th
   Reprint, 2010

REFERENCE BOOKS.
   1. Erwin Kreyszig, Advanced Engineering Mathematics (Latest Edition), Wiley Publishers, New Delhi.
   2. H. C. Taneja, Advanced Engineering Mathematics, Volume I & II, I.K. International Publishing
      House Pvt. Ltd., New Delhi.
   3. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint,
      2010.
   4. V. Krishnamurthy, V.P. Mainra and J.L. Arora, An introduction to Linear Algebra, Affiliated East–
      West press, Reprint 2005.
   5. D. Poole, Linear Algebra: A Modern Introduction, 2nd Edition, Brooks/Cole, 2005.

QUESTION PAPER PATTERN:

The Semester End Examination (SEE) is for 100 marks.
   1. There shall be five full questions carrying 20 marks each and all are compulsory
   2. Question No.1 shall consist of 20 MCQ carrying 1 mark each. These 20 questions shall be set from the entire syllabus with 5 questions from each unit.
   3. The remaining FOUR Questions shall be descriptive in nature and there shall be two questions from each unit.
   4. There shall be internal choice in Unit 1-4.

	SUBJECT TITLE: DIFFERENTIAL EQUATIONS & COMPLEX VARIABLES		
	Subject Code: 18MA21	**Number of Credits: 4 = 3 : 1 : 0 (L–T– P)**	**No of lecture hours per week: 05 (L=3+T=2)**
	Exam Duration:3 Hrs	**Exam Marks: CIE + Assignment + SEE = 40 + 10 + 50 = 100**	**Total No. of lecture hours: 65 (L=41+T=24)**

Course objective: The purpose of the course is to help the students to understand and apply the concepts of ODE'S, PDE's, infinite series and complex variables to solve tough engineering problems.

Unit No.	Syllabus content	No. of hours	
		Theory	Tutorial
1	**Differential Equations:** Exact and reducible to exact differential equations. Nonlinear differential equations- Clairaut's equations and Bernouli's equations. Applications-orthogonal trajectories. Linear differential equations of higher order with constant coefficients-inverse differential operator, Cauchy's and Legendre's DE's.	10	06
2	**Partial Differential Equations:** Formation of Partial differential equations (PDE) by eliminating arbitrary constants and arbitrary functions. Solution of PDE by direct integration. Lagrange's PDE. Solution of first and second order PDE by the method of separation of variables (two variables). Applications: solutions of one-dimensional heat and wave equations by the method of separation of variables.	10	06
3	**Fourier Series:** Introduction. Dirichlet's conditions. Fourier series of periodic function with period 2π and arbitrary period. Half range Fourier series. Applications to practical harmonic analysis.	10	06
4	**Complex Variables:** Analytic Function-Definition. Cauchy Riemann equations in Cartesian and polar coordinates (no proof). Construction of analytic functions, Harmonic conjugate. Cauchy's theorem and Cauchy's integral formula-problems. Discussion of transformations- $w = z^2$, $w = e^z$ and $w = z + 1/z$ ($z \neq 0.$)	11	06

Course Outcomes: After the successful completion of the course, the students are expected to:
CO1: analyze the basic concepts of differential equations and solve through standard methods.
CO2: use the concepts of partial differential equations to solve practical problems arising in a variety of engineering streams.
CO3: identify the practical importance of solutions of Fourier series and their utility.
CO4: apply logical thinking to problem-solving and identify an appropriate mathematical tool for solving various engineering problems.
CO5: utilize the knowledge of complex variables for constructing physical models connected to diverse engineering Phenomena.

Course Outcomes (CO) Mapping with Programme Outcomes (PO)

CO1: PO1, PO2
CO2: PO1, PO2
CO3: PO1, PO2
CO4: PO1, PO4
CO5: PO1, PO2

TEXTBOOKS:

1. B.S. Grewal, Higher Engineering Mathematics (44th Edition), Khanna Publishers, New Delhi.
2. B.V. Ramana, Higher Engineering Mathematics, Tata McGraw Hill publications, New Delhi, 11th Reprint, 2010

REFERENCE BOOKS.
1. Erwin Kreyszig, Advanced Engineering Mathematics (Latest Edition), Wiley Publishers, New Delhi.
2. H. C. Taneja, Advanced Engineering Mathematics, Volume I & II, I.K. International Publishing House Pvt. Ltd., New Delhi.
3. N.P. Bali and Manish Goyal, A text book of Engineering Mathematics, Laxmi Publications, Reprint, 2010.
4. G.F. Simmons and S.G. Krantz, Differential Equations, Tata McGraw Hill, 2007.
5. J. W. Brown and R. V. Churchill, Complex Variables and Applications, 7th Ed., Tata McGraw Hill publications, New Delhi, 2004.

QUESTION PAPER PATTERN:

The Semester End Examination (SEE) is for 100 marks.
1. There shall be five full questions carrying 20 marks each and all are compulsory
2. Question No.1 shall consist of 20 MCQ carrying 1 mark each. These 20 questions shall be set from the entire syllabus with 5 questions from each unit.
3. The remaining FOUR Questions shall be descriptive in nature and there shall be two questions from each unit.
4. There shall be internal choice in Unit 1-4.

	Subject Title : Engineering Physics (Common to all Branches)		
	Subject Code :18PH12/22 PH12/22	**No. of Credits: 04**	**No. of lecture hour/week : 04 (4L+0T)**
	Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 52 [13L /unit]**

*Course objective***:** To understand the importance of applications of Applied Physics in daily life and to provide students with basic understanding of the Physics that may be required by engineers in the course of their careers. To introduce the Engineering students to the basics of elasticity, vibrations, quantum mechanics, electrical and dielectric properties of materials, laser and fiber optics with an emphasis on inculcating strong analytical skills among them so that they can understand and analyze complex engineering problems with relative ease

Syllabus for the Academic year 2020-21

Sl. No.	Syllabus content	No. of hours
1	**UNIT I : ELASTICITY AND VIBRATIONS** **Elasticity**: Review of Elasticity (Elasticity, Plasticity, stress and strain, different types of stress and strain. Hooke's law and its limits. Elastic moduli: Young's modulus(Y), Rigidity modulus (n), bulk modulus (K) and Poisson's ratio (σ)). Stress-Strain curve and its application. Derivation of relation between Y, n & σ and Y, K & σ. Derivation of relation between Y, n & K. Torsion: Expression for couple per unit twist of a solid cylinder (derivation). Torsional Pendulum: expression for period of oscillation and Rigidity modulus (derivation). Bending of Beams: Definition of beam, neutral surface and neutral axis. . Classification of beams based on the type of support and mention its engineering applications. Expression for bending moment of a beam (derivation). Expression for Young's modulus of the material of a single cantilever (derivation). Numerical problems. **Vibrations:** Review of simple harmonic motion (SHM). Theory of free vibrations, theory of damped vibrations and discussion of three cases of damping. Application of damping in automobiles. Theory of Forced vibrations. Resonance: condition for resonance, Sharpness of resonance. Numerical problems.	13
2	**UNIT II: MODERN PHYSICS AND QUANTUM MECHANICS** **Modern Physics:** Review of classical Physics. Wave particle Dualism, de- Broglie hypothesis – de Broglie wavelength for free and accelerated electron. Matter waves and their properties. Phase velocity, group velocity (no derivation), relation between phase velocity and group velocity, relation between group velocity and particle velocity, relation between phase velocities, group velocity and velocity of light, expression for de-Broglie wavelength using group velocity. Numerical problems. **Quantum Mechanics:** Heisenberg's uncertainty principle and its physical significance. Application of uncertainty principle: Non-confinement of electron in the nucleus. Wave function. Properties and Physical significance of a wave function. Probability density and Normalization of wave function. Setting up of one dimensional time independent	13

		Schrödinger's wave equation. Eigen values and Eigen functions. Application of Schrödinger wave equation to a particle in a box: expression for energy Eigen values and Eigen functions for a particle in one-dimensional potential well of infinite height and finite width, discussion of wave functions and probability density for a particle in a box. Numerical problems	
3		**UNIT III : ELECTRICAL AND DIELECTRIC PROPERTIES OF MATERIALS** **Electrical properties:** Concept of Free Electron. Assumptions of classical free electron theory. Drift velocity, mean collision time, mean free path and relaxation time. Expression for electrical conductivity of metals (derivation). Drawbacks of classical free electron theory. Assumptions of quantum free electron theory, Fermi level, Fermi energy, Fermi velocity and Fermi temperature. Fermi factor f (E) and its dependence on temperature. Expression for density of states (qualitative), expression for Fermi energy at absolute temperature (derivation). Electrical conductivity (qualitative expression using effective mass and Fermi velocity). Merits of quantum free electron theory. Numerical problems. **Dielectric properties:** Introduction to dielectrics: types of dielectrics, polarization, polarizability, dielectric constant, relation between dielectric constant and polarizability. Polarization mechanism and types of polarization. Derivation of equation for internal field in liquids and solids (1-Dimensional). Expression for Clausius - Mossotti equation (Derivation). Applications of dielectric materials in engineering(Mica, glass, rubber, Porcelain) Numerical problems	13
4		**UNIT IV : LASERS AND OPTICAL FIBRES** **Lasers:** Difference between the ordinary and laser light. Interaction of radiation with matter: induced absorption, spontaneous emission and stimulated emission of radiation. Expression for energy density in terms of Einstein's coefficients (derivation). Requisites of a laser system. Condition for laser action. Classification of laser based on active medium and mention of their applications. Principle, construction and working of semiconductor laser. Application of laser: Holography, principle, recording (wave front division technique) and reconstruction of 3-D images. Mention of applications of holography. Numerical problems. **Optical fibers:** Introduction to optical Fiber and propagation mechanism. Basic Structure of an Optical Fiber, Acceptance Angle and Acceptance Cone of a fiber, Numerical Aperture Expression for angle of acceptance and numerical aperture (derivation). Fractional index change, V- number and modes of propagation (N). Types of optical fibers. Attenuation, mention the causes for attenuation, expression for attenuation coefficient (derivation). Application of optical fibers: Point to point communication with block diagram. Advantages and limitations of fiber optic communication over conventional communication system. Numerical problems.	13

Course Outcomes: After successful completion of the course the student will be able to:

CO1 Understand and apply the basic principles involved in the design of loaded beams and couple acting on a cylindrical rod under torsion.

Distinguish between free, damped, forced vibrations, resonance and its applications.

CO2 Understand the dual nature of matter, uncertainty principle and its application, physical significance of wave function and application of Schrodinger wave equation

CO3	Understand the electrical properties of metals and dielectric properties of materials.
CO4	Understand the basic principle of laser and optical fibers and to recognize the use of laser and optical fibers in various fields.

Note: All the course outcomes (CO1, CO2, CO3, CO4,) map with Programme outcome one and two (PO1, P02)

Text Books:

1. Textbook of Engineering Physics, P. S. Aithal, H. J. Ravindra, Acme Learning Pvt. Limited, New Delhi, 1st edition, 2017.
2. Dr. Amit Sarin, Anil Rewal, Engineering Physics Books, Wiley India Private Ltd., New Delhi 9th Edition 2014.
3. Avadhanulu M. N. and P.G. Kshirsagar, A text Book of Engineering Physics, 10th Edition – 2014.
4. Engineering Physics by Gaur and Gupta, Dhanpat Rai Publications (P) Ltd.
5. Dr. K. Vijayakumar, Dr. S. Chandralingum, Modern Engineering Physics, S. Chand and Company Limited, 1st edition 2010

Reference Books:
1. S. O. Pillai, Solid State Physics, New Age International. Sixth Edition.
2. A Marikani, Engineering Physics, PHI Learning Private Limited, Delhi - 2013
3. Prof. S. P. Basavaraju, Engineering Physics, Subhas Stores, Bangalore.
4. V. Rajendran , Engineering Physics, Tata McGraw Hill Company Ltd., New Delhi -2012
5. S. Mani Naidu, Engineering Physics, Pearson India Limited – 2014

e- learning resources:
1. http://www.nptel.ac.in
2. https://en.wikipedia.org
3. https://physicsworld.com/
4. https://www.youtube.com
5. https://www.youtube.com/thesciencecube

Theory Question Paper Pattern:

- The Semester End Examination (SEE) question paper will set for 100 marks.
- The Question paper will have 9 full questions each carrying 20 marks
- Question-1 is compulsory and it consists of 20 multiple choice questions (MCQ) carrying one mark each.
- Remaining 8 questions are descriptive and the student should answer 4 full questions, selecting one full question from each unit.
- Each full question will have sub questions covering all the topics under a unit.
  Enter the name of the subject Title.

	Subject Title : BASIC ELECTRICAL ENGINEERING		
	Subject Code : 18EE13/23	**No. of Credits:** 03=02:2:0 (L - T – P)	**No. of lecture hour/week : 04**
	Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 52**

Course Learning Objectives:

1 To introduce the Basic concepts in electrical engineering to all the disciplines of engineering students.

2 Students will learn the fundamentals of electricity and magnetism that serve as the basis for topics like controls, electronics, communication, instrumentation medical electronics etc.,

3 Students will learn the basic working principle of static electromagnetic conversion device such as transformers,.

4   Students will understand the working principle of dc machines, induction motors and ac generators.

5 Solve the simple problems on electromagnetic conversion devices such as transformers, induction motors, Synchronous generators and dc machines.

Unit No	Syllabus Contents	No.of Hours	Blooms Taxnomy level.
1	**1.** (a) Review of D.C. Circuits & Magnetism: Introduction to electrical current, electromotive force and electrical resistance, ohm's law and Kirchhoff's laws, resistances in series & parallel circuits. Power and energy in electrical circuits.Introduction to magnetic field, flux, magnetic field intensity, flux density and mmf. (No Illustrative Examples on D.C. Circuits & Magnetism) 1. (b) Electromagnetism: Faradays laws, Lenz's law. Fleming's Right hand rule & dynamically induced e.m.f.. Statically induced e.m.f.s., concept of self and mutual inductance & coefficient of coupling. Energy stored in magnetic field. Fleming's Left hand rule & force on current carrying conductor. Illustrative examples. 1.(c) AC fundamentals: Generation of sinusoidal voltage, average value, RMS value, form factor and peak factor of sinusoidally varying voltage and current, concept of lagging and leading sinusoids. Phasor representation. TEXT 1 and TEXT 2. Reference 1	13	L1, L2

Unit No	Syllabus Contents	No.of Hours	Blooms Taxnomy level.
2	**2.(a) Single-phase AC circuits:** relation between voltage and current, real, reactive, apparent power and power factor in circuits with R, L, C, R-L, R-C, R-L-C elements. Illustrative examples involving series and parallel circuits. **2.(b) Three phase circuits:** Concept of three phase generation, phase sequence, balanced supply and load. Relationship between line and phase values of voltage and current for balanced star and delta connections. Power & power factor in balanced circuits. Illustrative examples on balanced circuits. Advantages of three phase systems. TEXT 1 and TEXT 2 Reference 1	13	L1 –L3
3	**3. (a) Transformers:** introduction, principle of operation and construction of single phase core and shell type transformers. Emf. equation, losses and efficiency and definition of voltage regulation. Illustrative problems on emf. equation and efficiency. **3. b) Three phase induction motors:** introduction, concept of rotating magnetic field. Principle of operation, constructional features. Applications of squirrel-cage and slip-ring motors. Necessity of a starter. Illustrative examples on slip calculate TEXT 1 TEXT 2 Reference 1	13	L1-L3
4	**4. a) DC machines:** introduction, principle of operation of dc a generator, types, constructional features, emf. equation of generator and illustrative examples. Principle of operation of dc a motor, back emf. and torque equation. Types of motors and their applications. Necessity of starter. Illustrative examples. **4.(b) Synchronous generators:** Introduction, principle of operation. Types and constructional features. Emf. equation, concept of winding factor (excluding derivation). Illustrative examples on emf equation. TEXT 1 and TEXT 2. Reference Book 1	13	L1-L3

Note 1: Unit 1 to 5 will have internal choice

Note 2: a) Two assignments are evaluated for 5 marks: Assignment -1 from Units 1 and 2. Assignment - 2 is from unit 3 and 4
b) Group activity for 5 Marks has to be evaluated through PPT Presentation/Subject Quiz/ Project/Seminar.

Note:3 Out of 5 Units, Unit 4 is a Webinar unit conducted through Google Classroom/Zoom/Cisco Webex etc and will be delivered by subject faculty.

Course Outcomes:

CO1 Define the fundamental laws of electrical engineering.
CO2 Apply fundamental concepts to solve problems on electrical circuits.
CO3 Apply fundamental laws of electromagnetic induction for AC /DC machines.
CO4 Analyze AC /DC machines by applying fundamental laws of electromagnetic induction.
CO5 Solve problems on machines and transformers.

Course Outcomes Mapping with Programme Outcomes.

Sl.No	Course Outcome	Level of Blooms Taxonomy	No. of hours of teaching	Programme Outcome											
				1	2	3	4	5	6	7	8	9	10	11	12
1.	CO1	**1**	**13**	3	2								1	1	1
2.	CO2	**2**	**7**	3	3								1	1	1
3.	CO3	**4**	**8**	3	3				1	1			1	1	1
4.	CO4	**5**	**7**	3	3				1	1			1	1	1
5.	CO5	**5**	**7**	3	3				1	1			1	1	1
Average CO				3	3				1	1			1	1	1

Course Outcomes Mapping with Programme Specific Outcomes.

Course Outcome	PSO1	PSO2	PSO3
CO1	3		
CO2	3		
CO3	3	1	
CO4	2	3	1
CO5	3	2	1
Average CO	**3**	**1**	**1**

Text Books.

1 D C Kulshreshtha, "Basic Electrical Engineering", 4th edition, TMH education private limited, new Delhi, , 2009

Reference Text Books.

1 E. Hughes, "Electrical Technology", 9th edition, International students 9th edition, Pearson , 2005

2 B L Theraja, "Fundamental of Electrical Engineering", 2nd Edition, S Chand Publications,2003

Web Links.

1   https://nptel.ac.in/courses/108/105/108105053/
2   https://nptel.ac.in/courses/108/108/108108076/

	Subject Title : Civil Engineering and Mechanics		
	Subject Code : 18CV14 / 24	**No. of Credits:** 03=02:2:0 (L - T – P)	**No. of lecture hour/week : 04**
	Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 52**

Course Title: Civil Engineering and Mechanics	
Course Code: **18CV14 / 24**	Evaluation Procedure:
Credits: **03**	CIE + Assignment + Group Activity + SEE Marks = 40 + 5 + 5 + 50 = 100
Teaching Hours: 52 Hrs (L:T:P:S:2:2:0:0)	SEE Duration: 3 Hrs

Course Learning Objectives:	
1	Students will be exposed to apply the knowledge of the principles of mechanics in various fields of engineering curricula and develop analytical ability and powers of reasoning.
2	To become conversant with basic concepts of equilibrium with reference to support reactions and friction.
3	To understand the significance of centroid and moment of inertia and to determine the coordinates of the centroid and moment of inertia of the composite sections.
4	To familiarize with laws of motion, kinematics of motion and their inter relationships.

UNIT – I	
Fundamental principles of mechanics: Introduction, basic principles and concepts of mechanics, laws of mechanics, idealization of mechanics **Basic principles of statics:** Force and its characteristics, equivalent system of forces, principles of transmissibility of a force, systems of forces, resultant of coplanar concurrent forces, component of a force, moment of a force with respect to a point, principles of moments (Varignon's theorem) Couples, effects of a force at another point, equations of static equilibrium, free body diagram. **Co-planar forces (forces in a plane):** Resultant of co-planar concurrent forces, equilibrium of co-planar concurrent forces and Numerical problems. **Co-planar non concurrent force system:** Resultant of co-planar non-concurrent forces, equilibrium of coplanar non concurrent forces and Numerical problems.	**12 Hrs**
UNIT – II	

Support reactions: Introduction, Beam, Classification of beam, types of loads and supports, support reactions in statically determinate beam- Numerical problems. **Friction:** Introduction, laws of dry friction, limiting friction, co-efficient of friction, angle of friction, angle of repose and cone of friction. Numerical problems on Blocks (horizontal and inclined plane), Ladder friction and Wedge friction.	**10 Hrs**

UNIT – III	
Centroid: Introduction, centroid and centre of gravity. Derivations of simple geometrical sections – rectangle, triangle, semicircle and quarter circle. Numericals on composite sections. **Moment of Inertia:** Introduction, Moments of Inertia of an area, Parallel axis theorem, Perpendicular axis theorem, Radius of gyration, Polar moments of inertia. Derivations of simple geometrical sections – Rectangle, Triangle, Circle, Semicircle and Quarter circle. Numericals on composite sections.	**10 Hrs**
UNIT – IV	

Basic Principles of Dynamics: Introduction, kinematics and kinetics, Definitions of Displacement, Speed, Velocity and Acceleration. D' Alembert's principle with Numerical problems. Newton's Laws of motion. Rectilinear motion with simple-numerical problems Differential relationship between displacement, velocity and accelerations. Projectile with numericals.	**7 Hrs**
UNIT – V (Blended Learning)	
Self-Study and Group activity Introduction to Civil engineering: Scope of different fields of civil engineering – Surveying, Building materials, Construction technology, Geotechnical engineering, Structural engineering, Hydraulics, Water resource engineering and Irrigation engineering, Transportation engineering, Environmental engineering. **Infrastructure:** Types of infrastructure, role of civil engineer in the infrastructure development, Effect of the infrastructure facilities on socio-economic development of a country. **Roads:** Types of roads, components and their function. **Bridges and Dams:** Different types with simple sketches.	**12 Hrs**

Course Outcomes: The students will be able to	
1	Determine the basics of Civil Engineering, Concept of Engineering Mechanics, Forces, and Force System and determine the resultant of co-planar force system.
2	Determine the geometrical property like, coordinates of the centroid and Moment of Inertia (with radius of gyration) of regular, irregular and composite sections.
3	Analyse the kinetics, kinematics and rectilinear motion of a body with numerical approach.

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- Each full question will be for 20 marks.
- There will be two full questions (with a maximum of four sub - questions) from each unit.
- Each full question will have sub - question covering all the topics under a unit.
- The students will have to answer five full questions, selecting one full question from each unit.

Text Books:	
1	Irving H Shames, Engineering Mechanics, Prentice Hall.
2	F P Beer and E R Johnson, Vector Mechanics for Engineers, Vol-II-Dynamics, Tata McGraw Hill.
3	Engineering Mechanics by Timoshenko-Young and J V Rao, Mc Graw-Hills Book Company, New Delhi.
4	Elements of Civil Engineering (IV Edition) by S S Bhavikatti, Vikas Publishing House Pvt. Ltd. New Delhi.
5	Elements of Civil Engineering and Engineering Mechanics, by M N Shesha Prakash and G V Mogaveer, PHI Learning 2009.

Reference Books:	
1	R C Hibler, Engineering Mechanics: Principles of Statics and Dynamics, Pearson Press.
2	Endy Ruina and Rudraprathap, Introduction to Statics and Dynamics, Oxford University Press.
3	Shanes and Rao, Engineering Mechanics, Pearson Education.
4	Bansal R J, Text Book of Engineering Mechanics, Likshmi Publications.
5	Engineering Mechanics by M V S Rao and D R Durgaiah, University Press 2005.

CO-PO Mapping											
CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓		✓								✓
CO2	✓	✓										✓
CO3	✓	✓		✓								✓

	Subject Title : COMPUTER AIDED ENGINEERING DRAWING		
	Subject Code : 18MEL15 / 25	**No. of Credits: L-T-P-SS 0:2:2:0 =3**	**No. of lecture hour/week : 04**
	Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 52**

COURSE OBJECTIVES:

1. To make the student to understand the importance of drawing in all walks of life.
2. To give basics of different views of an object and practice principal planes projections
3. To make him understand different orientations of lines, planes and solids.
4. Give the concept of Isometric view of simple objects.

#	CONTENTS	Hrs
UNIT-1	**INTRODUCTION TO ENGINEERING DRAWING (**CLASSROOM TEACHING)	**08**
	BASICS: History of engineering drawing, Introduction to drawing instruments and their uses, understanding and drawing reducing, enlarging and same scales, different drawing sheet sizes, Different type of lines used in engineering drawing, Introduction to Lettering, Construction of Regular Polygons and Dimensioning. **ORTHOGRAPHIC PROJECTIONS OF POINTS:** Introduction to Orthographic projections, Principal views and Principal Planes [VP, HP, LPP & RPP], Four Quadrants and system of projection, Orthographic projections of points, Location of point in first quadrant.	
UNIT-2	**ORTHOGRAPHIC PROJECTION OF STRAIGHT LINE [FIRST ANGLE] (**CLASSROOM TEACHING)	**08**
	Definition of a Straight line, Projection of line, Position of line with respect to HP, VP & PP: i) Parallel to both planes, ii) Parallel to one plane and perpendicular to the other, iii) Parallel to one plane and inclined to other, iv) Inclined to both planes. True length and Apparent Length, True Inclination and Apparent Inclination, End projector distance.	
UNIT-3	**ORTHOGRAPHIC PROJECTIONS OF PLANE SURFACES [FIRST ANGLE]** (BLENDED TEACHING)	**08**
	Definition of plane surfaces, Placing a plane surface, Projections of plane surface: Triangle, Square, Rectangle, Rhombus, Pentagon, Hexagon, and Circle. Planes in different positions by change of position only.	
UNIT-4	**PROJECTIONS OF SOLIDS** (BLENDED TEACHING)	**20**
	Definition of solid, Classification of solids (Polyhedron and solids of revolution).	

	Projection of triangular, square, rectangular and hexagonal prisms and pyramids, tetrahedron, projection of cone and cylinder in different positions.	
UNIT-5	**ISOMETRIC PROJECTION** (ONLINE TEACHING)	**08**
	Introduction, Isometric scales, Isometric projections of Regular Polygons, Isometric Projection of prisms, pyramids, cylinders, cones, sphere, hemisphere, tetrahedron, hexahedron/cube and combination of **any two full** solids or combination of **one full** and **one frustum** of one solids. Demonstration of basic machine parts	

COURSE OUTCOMES: On completion of the course, student should be able to;

1. Draw views of points, lines and planes in any orientation.
2. Draw views of simple solids resting in different positions.
3. Visualize the building / machine yet to be built / manufactured.

TEXT BOOKS:

1. Engineering Graphics – K.R. Gopalakrishna, 32nd Edition, 2005
2. Engineering Drawing – N.D. Bhatt and V.M. Panchal, 4^{8th} Edition, 2005
3.

REFERENCE BOOKS:

1. Computer Aided Engineering Drawing – S. Trymbaka Murthy, 3rd Revised Ed, 2006.

2. Fundamentals of Engineering Drawing with an Introduction to Interactive Computer Graphics for Design and Production – J. Luzadder Warren, M. Duff John, 2005
3. A Primer on Computer Aided Engineering Drawing – 2006.

COURSE OUTCOMES: On completion of the course, student should be able to:

CO1: To make the student to understand the importance of drawing in all walks of life.

CO2: To give basics of different views of an object and practice principal planes projections and to make him understand different orientations of lines,

CO3: Will be able to orient the planes in different directions

CO4: Will be able to project solids in different orientations.

CO5: Give the concept of Isometric view of simple objects.

MAPPING OF COs WITH POs											
COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO
CO1	3	2	2	1	2	0	1	1	2	2	0	2
CO2	3	2	2	1	2	0	1	1	2	2	0	2
CO3	3	2	2	1	2	0	1	1	2	2	0	2
CO4	3	2	2	1	2	0	1	1	2	2	0	2

CO5	3	2	2	1	2	0	1	1	2	2	0	2
Strength of correlation: Strongly related-3, Moderately related-2, Weakly related-1, Not related-0												

CONTINUOUS INTERNAL EVALUATION (CIE):

1. Solve class work problems manually using pencil, scale and other geometry instruments on A4 drawing sheets and submit them to the staff-in-charge, and only after the students are allowed to do in computer drafting.
2. All the solutions must be valued on the spot by examining the manual sketches, computer display and hard copies.
3. All the sketches including the computer print outs must be submitted in a bound form for Continuous Internal Evaluation and they must be preserved for one year by the concerned Department.
4. Break-up of marks for CIE:
   - ➤ Manual Sketching   -   25 Marks
   - ➤ Computer Drafting   -   15 Marks
   - ➤ Test   -   10 Marks

     Total   **-**   **50 Marks**

SCHEME OF EXAMINATION FOR SEE:		
Q. No.	**CHAPTERS**	**Marks**
Q1 (a)	Orthographic projection of points	**05**
	Orthographic projection of Lines	**10**
Q2	Projection of Planes	**15**
Q3& Q4	Projection of solids **[2 question's with Choice]**	**20**
Q5 & Q6	Isometric projection **[2 question's with Choice]**	**15**
TOTAL		**50**
1. Note: Six Full Questions are to be set. 2. Three full Questions are to be answered with a choice as Q1 or Q2; Q3 or Q4 and Q5 or Q6. 3. Both manual sketching and computer printout are necessary for all questions. 4. 40% of marks is for manual sketching and 60% is for computer print outs.		

	Subject title: Engineering Physics Laboratory (Common to all Branches)		
	Subject Code :18PHL16/26, PHL17/27	**No. of Credits: 1**	**No. of hours /week: 02 hrs**
	Exam Duration: 3 hrs.	**Exam Marks: 50**	**Total hours: 28**

Course objective: To impart physical measurements skills and to make the students to understand coherence between theoretical and practical measurement and to interpret results and develop correct conclusions. To equip the students with practical knowledge in mechanics, electronics and optics experiments

List of Experiments for the Academic year 2020-2021

Sl. No.	Title of the Experiment	Compatibility with the theory course
1.	Determination of Young's Modulus of a material by single cantilever.	Unit I
2.	Determination of Rigidity modulus of a material of a wire by torsional pendulum.	Unit I
3.	Determination of acceleration due to gravity by using bar pendulum.	Unit I
4.	Determination of resonant frequency & quality factor in Series & Parallel LCR Circuits	Unit I
5.	Determination of Planck's constant using LED's	Unit II
6.	Determination of energy gap of a semiconductor.	-----
7.	Determination of knee voltage and resistance from I-V characteristics of Zener Diode.	------
8.	Measurement of dielectric constant of a material by charging/discharging method.	Unit III
9.	Determination of Fermi energy of copper.	Unit III
10.	Determination of wavelength of Semiconductor Laser by diffraction method.	Unit IV
11.	Determination of Acceptance angle and numerical aperture of an optical fiber.	Unit IV
12.	Radius of curvature of Plano convex lens using Newton's rings	Unit IV

Course outcome: At the end of the course the students will be able to:

- Develop skills to impart practical knowledge in real time solutions.
- Understand principle, concept, working and application of new technology and comparison of results with theoretical calculations.

.**Reference Books:**

1. Laboratory Manual in Applied Physics   -- H. Sathyaseelan. **–** New Age International.

2. An Advanced Course in Practical Physics -- D. Chattopadhyay and P.C. Rakshit, New Central Book Agency (p) Ltd, Kolkata .

Web link for Physics virtual lab: https://www.vlab.co.in/broad-area-physical-sciences

	Subject Title : BASIC ELECTRICAL LAB		
	Subject Code : 18EEL17/27	**No. of Credits:** 1=0:0:1(L - T – P)	**No. of lecture hour/week : 02**
	Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 26**

Course Learning Objectives:

1. To introduce symbols, meters, Devices and DC and AC Machines.

2. Students will learn connections and measurement of various parameters in electrical circuits.

3. Students will learn to verify Fundamental Theorems of electrical Circuits.

4. Students will learn to determine the Magnetization Characteristics of DC Machine

5. Students will learn to determine the efficiency of Transformers.

Expt No	Experiment Contents	No.of Hours	Blooms Taxnomy level.
1	Measurement of Resistance using Voltmeter-Ammeter method and verification using Wheatstone bridge.	2	L1, L2
2	Verification of KVL and KCL for DC circuits.	2	L1,L2,L3
3	Measurement of Current, Power and Power factor of Incandescent lamp, Fluorescent lamp, CFL and LED lamp.	2	L1, L2, L3
4	Measurement of Inductance by three-voltmeter method.	2	L1, L2, L3,
5	Impedance calculation for R-L / R-C circuits	2	L1, L2, L3
6	Load test on a single-phase transformer.	2	L1, L2, L3
7.	Voltage and Current relationship of three phase star/delta circuits.	2	L1, L2, L3
8.	Measurement of three-phase power using two wattmeter method	2	L1, L2, L3
9	Open Circuit Characteristics of DC Shunt Generator.	2	L1, L2, L3
10	Two way and three way control of Lamp	2	L1, L2, L3

Expt No	Experiment Contents	No.of Hours	Blooms Taxnomy level.
	EXPERIMENTS BEYOND SYLLABUS		
11	Determination of percentage error of a single-phase energy-meter and to plot its percentage error v/s load curve.	2	L1, L2, L3
12	Speed load characteristics of a three-phase induction motor.	2	L1, L2, L3
13	**DEMONSTRATION EXPERIMENTS (FOR CIE ONLY)**		
	Demonstration of FUSE and MCB by creating a fault.	2	L1, L2

Note 1: Laboratory report should be submitted to the subject faculty every week and evaluation will be done on the same week only.

Course Outcomes:

CO1   Students will be able to identify the symbols, meters, Devices, DC and AC Machines.

CO2   Students will learn connections and measurement of various parameters in electrical circuits.

CO3   Students will learn to verify Fundamental Theorems of electrical Circuit.

CO4   Students will be able to learn to determine the Magnetization Characteristics of DC Machine.

CO5   Students will be able to determine the efficiency of Transformers.

Course outcomes Mapping with programme outcomes

Sl.No	Course Outcome	Level of Blooms Taxonomy	No. of hours of teaching	Programme Outcome											
				1	2	3	4	5	6	7	8	9	10	11	12
1.	CO1:	**2**	**6**	3	2				1		1				1
2.	CO2:	**3**	**2**	3	3	1		1			1	1			1
3.	CO3:	**2**	**2**	2	3			1		1	1				1
4.	CO4:	**3**	**2**	2	3	1		1			1				1
5.	CO5:	**4**	**2**	3	2	1		1			1				1

Average CO	3	3	1		1			1			1

Course Outcomes Mapping with Programme Specific Outcomes.

Course Outcome	PSO1	PSO2	PSO3
CO1	3	1	
CO2	3	1	1
CO3	3	2	1
CO4	3	2	
CO5	3	2	
Average CO	**3**	**2**	**1**

Text Books and References.

1   Dr.Eranna Dr.S. Vasudevamurthy, "**Department manual.**
Web Links.

1   http://vlab.amrita.edu/?sub=1&brch=75&sim=217&cnt=1/

2   http://vlab.amrita.edu/?sub=1&brch=75&sim=322&cnt=1

	COMMUNICATION SKILLS – I/II semester (2020-2021)	
	Subject Code: 18HS11/21	**Credits-1**	**No of lecture hours per week: 2 Hrs**
	Exam Duration: 2 hours	**Exam Marks: 50**	**Total No. of lecture hours: 26 hrs per semester**

Course objective:

1. **GRAMMAR:** The lessons under this unit are designed to enable the students to assimilate the correct patterns of the language and also help to develop students' insight into the structure of English language.

2. **VOCABULARY:** Under the topics like synonyms, antonyms, homophones and word formation, students' vocabulary bank will be enriched. These topics emphasize on massive vocabulary acquisition. The learner will learn to use vocabulary appropriately, in various situations

3. **SITUATIONAL DIALOGUES:** The main goal of this unit is to help students to enable them to communicate more effectively in English. They will learn to express opinions including facts & ideas & maintain conversation in everyday situations.

4. **LSRW skills:** These lessons will help students make inferences and predictions about spoken discourse and by utilizing digital literacy tools their LSRW skills can be enhanced.

5. **Unit 5** will give rigorous practice to improve conversational skills. Various chapters under this unit are designed to help students in mastering good speaking skills, implying the ability to distinguish various situations which in turn require different strategies while speaking.

6.

Unit no	Syllabus content	Hours/COs

1	**GRAMMAR-I**
	1.Parts of speech
	2.Articles
	3.enses
	4.Auxiliary and Modal verbs
	    a. Transformation of Sentences:
	    b. Active & Passive voice
	    c. Reported speec
		4
		
		CO1

2	**VOCABULARY:** 1. word formation (Root words, prefix & suffix) 2. Synonyms, Antonyms & Homophones 3. Collocations 4. One word substitute 5. Often confused words	**6** CO2
3	**SITUATIONAL DIALOGUES:**	**6**

	1. Self introduction, greeting, thanking, accepting thanks, apologizing, invitations 2. Expressing ability, certainty 3. Expressing opinions 4. Making complaints 5. Addressing people correctly 6. Wh-questions/ yes-no questions	CO3
4	LSRW Skills	5 CO4
5	1. Role Plays 2. Just a minute 3. Group Discussion 4. Persuasion Speech 5. Description	5 CO5

Course Outcome:

1. GRAMMAR : The students will have learnt the basic grammar rules by working out exercises on various aspects of grammar and will have developed the mastery of language for expressing his/her ideas, feelings and experiences.
2. VOCABULARY: Vocabulary will be enhanced and fluency will be increased with the acquisition of greater number of words in one's quiver.
3. SITUATIONAL DIALOGUES: At the end of this unit, students' will have gained the ability to communicate confidently in various situations.

4. LSRW SKILLS: After the completion of this unit, students' listening, speaking, reading and writing skills will have improved.

5. The students will have improved and enhanced their communication skills and would have overcome their stage freight and express their views freely without hesitation. After the completion of this unit students will have learnt to express his views and opinions effectively in formal as well as informal situations.

REFERENCE:

01. English Grammar and composition by WREN AND MARTIN
02. Contemporary English Grammar by JAYANTHI DAKSHINAMURTHY
03. English for Technical Communication by LAKSHMINARAYANA K.R
04. Effective English for Technical Communication by FARATULLAH T.M
05. English for College and Competitive Examinations by DYVADATHAM R
06. Objective English (Multiple choice questions with answers for competitive examinations) by Dr.B.JAMES
07. Correct English Usage by MASALDAN K.N

08. Top Talking in English (international communication skills) by CHARLES T. RAJENDRA
09. Spoken English – English Learning Series by Dr. D KANAKADURGA
10. The English Errors of Indian Students by T.L.H SMITH PEARSE.

	Subject Title : Engineering Chemistry	
Subject Code : 18CH12 / CH22	**No. of Credits:** 4 : 0 : 0 (L-T-P)	**No. of lecture hour/week : 04**
Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 52**

Course Objectives:

To expose first year engineering students to various physicochemical aspects of engineering materials such as metals, alloys, plastics, conducting polymers etc. with a view to highlight their significance and importance in application oriented systems.

Syllabus:

Unit No.	Syllabus content	No. of hours
1	**Unit I** **Electrochemical energy sources:** **Electrochemical cells** Introduction to electro chemical cells, classification- galvanic and electrolytic cells, differences. EMF of a cell – definition, origin of single electrode potential, Helmholtz electrical double layer, sign convention and cell notation, standard electrode potential – definition, derivation of Nernst equation for single electrode potential, numerical problems. Types of electrodes- definition, classification of reference electrodes – primary and secondary, calomel electrode – construction, cell notation, electrode reaction and applications, Measurement of single electrode potential using calomel electrode, numerical problems on electrode potential and EMF of a cell, Electrochemical series, Concentration cells-Derivation of Emf of a concentration cell - numerical Problems. Ion selective electrodes – Glass electrode – construction and working, Determination of pH of a solution using glass electrode. **Batteries and fuel cells** Basic concepts – principal components of a battery, operation of a battery during charging and discharging, Battery characteristics – voltage, capacity, energy efficiency, cycle life and shelf life. Classifications of batteries- primary, secondary and reserve batteries. Construction , working and applications of Lead acid and Ni-Cd battery.	13

	Construction, working and applications of Ni-metal hydride battery, significance of Lithium , Construction, working and applications Li-ion battery.

Supercapacitors – Introduction, working, differences between capacitors & batteries, Applications. | |
| 2 | **Unit – II**

Corrosion and its control

Corrosion science

Corrosion – chemical(dry) and electrochemical(wet) corrosion, electrochemical theory of corrosion, galvanic series: Types of corrosion – Differential metal corrosion – Differential aeration corrosion –(pitting and water line corrosion), Stress corrosion – caustic embrittlement in boilers. Factors affecting the rate of corrosion – Related to nature of metal : electrode potential, relative sizes of anode and cathode, nature of the corrosion product. Related to environment: pH of the medium, temperature, humidity and presence of impurities in the atmosphere.

Corrosion control: Inorganic coatings; Anodizing – anodized coating of aluminium. Phosphating – process and applications. Metallic coatings – Anodic metallic coating ex : Galvanizing, Cathodic metallic coating ex : Tinning .Organic coatings – Paint, Varnish & Enamel, Corrosion inhibitors – definition, anodic and cathodic inhibitors, Cathodic protection – definition, sacrificial anode method.

Metal finishing

Technological importance of metal finishing. Electroplating- principle, Electrode and Electrolyte consumption methods.

Significance of Polarization, Decomposition potential and Overvoltage in electroplating and their applications. Effect of plating variables on the nature of electrodeposit – metal ion concentration, organic additives (complexing agents, brighteners, levellers, structure modifiers and wetting agents), current density, pH, temperature and throwing power of the plating bath ; Electroplating process - pre-treatment of the metal surface, Electroplating of chromium.

Electroless plating: difference between electroplating and electroless plating. Pre-treatment and activation of the surface, electroless plating of copper in the manufacture of PCBs & Electroless plating of Ni. | 13 |
| | **Unit –III** | |

3	**Energy sources** Chemical fuels : Hydrocarbon fuels, classification. Calorific value –GCV and NCV. Determination of calorific value of a solid or liquid fuel using Bomb calorimeter, numerical problems. Petroleum cracking – Fluidized catalytic cracking process, Knocking – mechanism and harmful effects, Octane and Cetane numbers, Reforming of petrol. unleaded petrol, power alcohol, Biodiesel, Catalytic converters – principle and working. **Fuel cells** – definition, differences between a battery and fuel cell, advantages of fuel cells, construction, working and applications of CH_3OH-O_2 fuel cell & solid oxide fuel cell (SOFCs). **Photovoltaic cells** – Introduction, definition, production of solar grade silicon, purification of silicon by zone refining process, construction and working of silicon-photovoltaic cell, advantages and disadvantages. **Instrumental methods of chemical analysis :** theory, instrumentation and applications of Colorimetric estimation of Cu, Potentiometric – redox reaction and Conductometric – acid mixture against base.	13
4	<u>**Unit – IV**</u> **Polymer science , water technology and environmental chemistry** **Polymer science** Polymerization – Classification- addition and condensation polymerization with examples: Techniques of polymerization- bulk polymerization, solution polymerization, emulsion polymerization and suspension. Free radical mechanism taking ethylene as an example –Glass transition temperature (Tg) –significance and factors affecting Tg Types of plastics – thermosetting and thermoplastics ; compounding of resins into plastics. Synthesis and applications of PMMA, Polystyrene and Polyurethane. Synthesis and applications of phenol–formaldehyde resin. Elastomers: difference between synthetic rubber and natural rubber, vulcanization of rubber. Synthesis and applications of neoprene and butyl rubber; adhesives: synthesis and applications of epoxy resins. Conducting polymers: mechanism of conduction in polyacetylene and its applications **Water technology**	13

| | Impurities in water –water analysis : Hardness – types of hardness, determination hardness by EDTA method, determination of dissolved oxygen in water by Winkler's method.

 Potable water- desalination of water by electrodialysis method.

Environmental Pollution: Introduction, Air pollutants: Sources and effects of primary air pollutants. Secondary air Pollutant: Ozone depletion, greenhouse effect and global warming. Sources of water pollution, sewage, BOD and COD | |

Course Outcomes:

1. CO1: At the end of the first unit the student will be able to understand the basic concepts electrochemistry and its applications, in the construction of electrochemical energy sources.

2. CO2: At the end of the second unit the student will be able to understand concepts of corrosion and its control in the fabrication and design of structural materials and importance of metal finishing in enhancing physicochemical properties.

3. CO3: At the end of the third unit the student will be able to understand concepts of renewable and non-renewable energy sources, phase rule and instrumental techniques.

4. CO4: At the end of the fourth unit the student will be able to understand the application of polymeric materials for different applications and water quality parameters.

Reference:
1. Principles of Physical Chemistry B.R.Puri, L.R.Sharma & M.S.Pathania, S.Nagin Chand &Co.
2. Text Book of Polymer Science by F.W.Billmeyer, John Wiley & Sons
3. Corrosion Engineering – by M.G.Fontana, Mc Graw Hill Publications.
4. Environmental Chemistry by Stanley E. Manahan, 7th Edition, lewis Publishers, 2000
5. Engineering Chemistry by Dr Renu bapna, Macmilan publisher India limited
6. Engineering Chemistry by Jayaprakash and Venugopal Subhash Publications.
7. Nano Metal Oxides For Environmental Remediation. United Publications Dr. Jahagirdar A.A and Dr. Nagaswarupa H P

	Subject Title : PROGRAMMING FOR PROBLEM SOLVING		
	Subject Code : 18CS13/23	**No. of Credits: : 2:2:0:0 (L-T-P-S)**	**No. of lecture hour/week : 04**
	Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 52**

Course Objectives	Description
	The objectives of this course are to: 1) Provide students with the formal notations for solving a problem and make them learn the syntax of C language, thereby writing code with good programming style in UNIX platform. 2) Extend students knowledge about operating system and different operators in C. Understand and appreciate the use of arrays, strings, functions, structures and union, file handling in C.

UNIT No	Syllabus Contents	No of Hours	Blooms Taxonomy level.
1	**Introduction to UNIX Concepts:** UNIX Architecture, Features of UNIX, File System, Handling Ordinary Files. **Introduction to C Language:** Steps for program development: Algorithm, Flowchart, Structure of a C Program, Creating & Running a program, Programming examples. **Operators in C:** Assignment, Arithmetic, relational, logical, bitwise, conditional, increment and decrement operators.	12	
2	**Selection, Making Decisions, Repetition:** Two-way selection, Multiway-selection, Concept of a loop, Pretest and posttest loops, Jumps in loops, Programming examples. **Arrays :** Using arrays in C, Two-dimensional Arrays, Multi-dimensional arrays, Bubble Sort, Selection Sort, Linear Search, Binary search. **Strings :** String concepts, C strings, String manipulation functions, Programming examples.	14	
3	**Introduction to Pointers, Functions :** Pointers, Designing structured programs, Functions in C, User-defined Functions, Categories of Functions, parameter passing mechanisms, Arrays & Functions, Programming examples.	14	

4	**SELF STUDY :** **Introduction to Structures and Unions:** Basics of Structures, typedefinition, Array of Structures, Unions. **Storage classes :** auto, extern, static, register **File Handling :** File types, fopen(), fclose(),fscanf(),fprintf()	12	

Course Outcomes	Description	RBT Levels
At the End of the Course, the students should be able to		
CO1	Obtain knowledge about UNIX platform, understand basics of C Programming. Develops the ability to analyze a problem, develop an algorithm & flowchart to solve it.	L2
CO2	Define, analyze and interpret the concept of datatypes, operators, decision making, looping its declaration, initialization, and their usage.	L2
CO3	Design programs using pointers, arrays, strings, functions, structures and union, storage class specifiers, files in C.	L3

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	1	-	-	-	-	-	-	-	-	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-
CO3	3	3	3	-	-	-	-	-	-	-	-	-
Strong -3 Medium -2 Weak -1												

TEXT BOOKS:

1. Behrouz A. Forouzan, Richard F. Gilberg"Computer Science: A Structured Approach Using C", 3rd Edition, Cengage Learning, 2013.

   ISBN-13: 9780534491321 / ISBN-10: 0534491324
2. Sumitabha Das "UNIX Concepts & Applications", 4th Edition, 2015
   ISBN-13:978-0-07-063546-3/ ISBN-10:0-07-063546-3 (chapter 2.1,2.2,2.10, chapter 3.1 to 3.12, chapter 4.1 to 4.11,chapter 5.1 to 5.12)
3. VikasGupta : "Computer Concepts & C Programming", Dreamtech Press 2013.
ISBN-13: 9788177229981 / ISBN-10: 8177229982

REFERENCE BOOKS:
1. E. Balagurusamy: "Programming in ANSI C", 4th Edition, Tata McGraw Hill, 2007. 2. Brian W. Kernighan and Dennis Ritchie: "The C Programming Language", 2nd Edition, PHI, 1998. **3.** Yashavant P. Kanetkar : "Let Us C" , 5th Edition (https://letuscsolutions.files.wordpress.com/2014/09/let-us-c.pdf)
SELF STUDY REFERENCES/WEBLINKS:
1. https://www.geeksforgeeks.org/difference-structure-union-c/ 2. https://www.youtube.com/watch?v=KL65a0TyeYo 3. https://fresh2refresh.com/c-programming/c-storage-class-specifiers/ https://www.programiz.com/c-programming/c-file-input-output

REFERENCE BOOKS:

1. E. Balagurusamy: "Programming in ANSI C", 4th Edition, Tata McGraw Hill, 2007.
2. Brian W. Kernighan and Dennis Ritchie: "The C Programming Language", 2nd Edition, PHI, 1998.
3. Yashavant P. Kanetkar : "Let Us C" , 5th Edition
(https://letuscsolutions.files.wordpress.com/2014/09/let-us-c.pdf)

	Subject Title : Basic Electronics		
	Subject Code : 18EC14/24	**No. of Credits: : 3=2 : 1 : 0 (L-T-P)**	**No. of lecture hour/week : 04**
	Exam Duration: 3 hrs	**Exam Marks:100**	**Total No. of lecture hours: 52**

Course Learning Objectives: *From this course the student can learn*

1. The different semiconductor devices, its construction, characteristics and working principles.
2. The applications of semiconductor devices such as switch, amplifiers, regulators, oscillators and rectifiers.
3. The features, working principles and applications of Op-Amps.
4. The analysis of basic electronic circuits.
5. The fundamentals of digital systems such as number systems, binary arithmetic and Boolean algebra.

UNIT No	Syllabus Contents	No of Hours	Blooms Taxonomy level.
1	**SEMICONDUCTOR DIODES:** P-N junction diode, Characteristics, Rectifiers-Half-wave rectification, Full Wave rectification, Centre tapping and Bridge rectifiers, Capacitive filters for HWR and FWR (Excluding derivation), concept of inductive and Choke filter, Zener diode, Zener diode as voltage regulator, Numerical examples as applicable. (TEXT 1) Photo Diode, Light Emitting Diode, Photo-coupler. 78XX based Voltage regulator (Text-2)	10	L1, L2, L3, L4
2	**BJT and its Applications:** Transistor operation, transistors voltages and currents, amplification, Common Base Characteristics, Common Emitter Characteristics, Common Collector Characteristics, transistor as a switch. (Text-1) **FEEDBACK AMPLIFIERS**: Principles, Properties and advantages of Negative feedback, Voltage Series Feedback, Effects of negative feedback (no derivations) (Text-2) **OSCILLATORS**: Classification of Oscillators, Barkhausen criterion for oscillations, BJT RC phase shift, Hartley Oscillator, colpitts Oscillator. Expression for frequency of oscillations (no derivations). (Text-1)	10	L1, L2, L3, L4

3	**FIELD EFFECT TRANSISTORS** Introduction**,** Junction Field Effect Transistors, JFET characteristics, MOSFETs (Text-1) **SILICON CONTROLLED RECTIFIFER:** Introduction, SCR Operation SCR characteristics and parameters, Two transistor model, SCR specification (Text-1) **IC OPERATIONAL AMPLIFIERS: Introduction, IC operation amplifier:** Ideal OP AMP, Characteristics of an OP-AMP, Comparison of ideal OP-AMP with IC 741, Pin details of IC741 OP-AMP. (Text-2)	9	L1, L2, L3, L4
	Applications of Operational Amplifiers: as an Inverting amplifier, Non-Inverting Amplifiers, Voltage follower, Inverting Adder/Subtractor, Integrator and Differentiator, Numerical		

4	examples as applicable. OP-AMP based Wien bridge oscillator. (Text-2) **DIGITAL ELECTRONICS FUNDAMENTALS:** Introduction, Number System-Decimal, Binary, Octal and Hexadecimal, Conversion of numbers from one representation to another. Binary addition and subtraction, Boolean algebra, Logic Gates. Universal Gates NAND and NOR, Construction of Basic Gates using Universal Gates, Half adder and full adder. (Text 1)	10	L1, L2, L3, L4

Note1: Each Unit will have Internal Choice

Note2: Two assignments will be given for 5 Marks.

Course Outcomes: Upon successful completion of the course the student should be able to:

CO1	Define, Classify and list the different parameters of semiconductor devices and Op-amp.
CO2	Explain the different electronic circuits.
CO3	Design electronic circuits
CO4	Analyze different electronic circuits.
CO5	Convert number systems, realize logic gates

Course Outcomes Mapping with Programme Outcomes.

CO1   PO1,PO2,PSO2
CO2   PO1,PO2,PSO2
CO3   PO1,PO2 ,PSO2
CO4   PO1,PO2, PSO2
CO5   PO1,PO2,PSO2

Text Books.

1. David A Bell, "Electronic devices and circuits", 5th edition, Oxford University Press , 2008
2. D.P. Kothari, I. J. Nagrath, "Basic Electronics", 2nd edition, McGraw Hill Education (India) Private Limited, 2018
3. Thomas L. Floyd, "Electronic Devices and Circuits", 9th edition, Pearson Education, 2012

Reference Text Books.

1	Robert L Boylestad and Neshelsky, "Electronics Devices and Circuit Theory", Tenth edition, Pearson, 2012
2	Jacob Millman, Christos C. Halkias "Electronic Devices and Circuits", Second edition, TMH, 2001
3	Muhammad H Rashid, "Electronics Devices and Circuits", Second edition, Cengage Learning, 2014
4	Floyd, "Digital Electronics", First edition, PHI publications, 2009
5	Op Amps and Linear Integrated Circuits, " Ramakanth A Gayakwad, 4th
	edition,Pearson,2015

Web Links.

1   www.nptel.in
2   https://www.youtube.com/watch?v=w8Dq8blTmSA

List of Experiments: At least 05 experiments (Hardware/Software) have to be demonstrated out of 09 experiments.

The Practical/Exercises should be implemented with an attempt to develop different types of skills so that the students are able to acquire the practical competency.

Sl.No	Exercise/Practical	No. of Hours

1	To study the operation of CRO, Multimeter, Identification of Electronic components, Function generator and signal generator	2
2	To study Data sheets of various electronic components	2
3	To study the HWR/FWR	2
4	To study the operation of transistor switch circuit to switch ON/OFF	2
5	To study the operation of the logic gates	2
6	To construct Half adder/Full adder	2

Active learning Assignments (AL) : Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to ECE Department, Dr. AIT.

	Subject Title : ELEMENTS OF MECHANICAL ENGINEERING		
	Subject Code : 18ME15 / 25	**No. of Credits: : L-T-P-SS 2:2:0:0 =3**	**No. of lecture hour/week : 04**
	Exam Duration: 3 hrs	**Exam Marks: 100**	**Total No. of lecture hours: 52**

COURSE OBJECTIVES:

1. Knowledge on importance of steam and its properties.
2. Overview on water, steam and gas turbines. Internal combustion engine's performance.
3. Permanent metal joining processes and their applications.
4. Understanding of manufacturing process, turning machine with emphasis on importance on metal cutting and power transmission.

#	CONTENTS	Hrs.
UNIT-1	**ENERGY, STEAM AND TURBINES** (CLASS ROOM TEACHING)	10
	Energy – conventional and non-conventional energy sources and their comparison **Steam -**Steam formation at a constant pressure; properties of steam, simple numerical problems to understand the use of steam tables, Introduction to Boilers **Turbines -** Introduction, construction and working of reaction & impulse steam turbines, construction & working of open & closed cycle gas turbines, construction and working of Pelton wheel, Kaplan and Francis water turbines. Principles of pumps and valves. **(OFFLINE MODE)**	
UNIT-2	**I C ENGINES, REFRIGERATION AND AIR CONDITIONING** (BLENDED TEACHING)	16
	Internal combustion engines - Introduction, classification of I.C engines, parts of an I.C engine, I.C engine terminology, introduction to2-stroke petrol engines, construction and working principles of 4-stroke petrol & diesel engines, simple numerical problems (four stroke) on indicated power, brake power, mechanical efficiency, indicated and brake thermal efficiency (demonstration of working of I.C engines), introduction to MPFI engines. **Refrigeration and Air conditioning -** Introduction, definition of refrigeration, concepts of refrigeration, parts of a refrigerator, refrigeration terminology, types of refrigeration systems, comparison between VAR and VCR, commonly used refrigerants and their properties. Principles & working of room air conditioner, central air conditioning.	
UNIT-3	**METAL JOINING AND MANUFACTURING PROCESSES**	10

	(BLENDED TEACHING)	
	Soldering - working principle and applications; types of solder; sketch and description of soldering iron method. **Brazing -** Working principle and methods of brazing; Comparison of soldering and brazing. **Welding -**introduction and applications of welding; classification; sketch and description of electric arc welding. Sketch and description of oxy-acetylene gas welding; comparison of welding, soldering and brazing processes. **Manufacturing Processes -** Principles of casting, forging and powder metallurgy.	
UNIT-4	**LATHE AND POWER TRANSMISSION** (ONLINE TEACHING)	**16**
	Lathe - Working principle, specification of center lathe, sketch and description of operations performed – turning, facing, knurling, thread cutting, drilling, taper turning and boring; demonstration of operations in machine shop. **Power transmission -** Introduction; Belt drives – types of belts, types of belt drive; terminology - velocity ratio, creep and slip, simple numerical problems. **Gear drives** - Introduction, classification; gear trains – introduction; types of gear train; simple numerical problems on gear drives.	

TEXT BOOK:

1. Elements of Mechanical Engineering - K.R. Gopalkrishna, Subhash publishers, Bangalore.

REFERENCE BOOK:

1. Elements of Workshop Technology. Vol 1 & 2, S.K.H. Chowdhary, A.K.H. Chowdhary and Nirjhar Roy, 11th edition 2001, Media Promoters and Publishers, Mumbai.
2. Hand books of Mechanical Engineering

COURSE OUTCOMES: On completion of the course, student should be able to:

CO1: To know the basics, working of various power generation devices like steam, gas and hydraulic turbines.

CO2: To study about the various IC engines, and power absorbing devices such as refrigerators and air conditioning.

CO3: To know the principle, application of various metal joining and manufacturing processes.

CO4: Describe the working principles and applications of turning machine and power transmission methods for various applications.

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
MAPPING OF COs WITH POs											
CO1	3	1	1	1	1	2	2	1	1	1	1	3
CO2	3	2	2	1	1	2	2	1	1	1	1	3
CO3	2	1	1	1	2	2	2	1	1	1	1	3
CO4	3	1	2	1	2	2	2	1	1	1	1	3
Strength of correlation: Strongly related-3, Moderately related-2, Weakly related-1, Not related-0											

SCHEME OF EXAMINATION (SEE)

1. **COMPULSORY** objective multiple choice questions for 20 marks (Q.1) covering all the FOUR units. It should contain 20 questions of 1 mark each.
2. Two FULL questions from Unit-1 with choice (Q2 **OR** Q.3).
3. Two FULL questions from Unit-2 with choice (Q.4 **OR** Q.5).
4. Two FULL questions from Unit-3 with choice (Q.6 **OR** Q.7)
5. Two FULL questions from Unit-4 with choice (Q.8 **OR** Q.9).
6. Each FULL question carries 20 marks.
7. Answers are to be supported with schematic diagrams/sketches wherever necessary.
8. Each full question shall contain maximum of 3 subdivisions (Q2-Q9).

Subject title : Engineering Chemistry Lab		
Subject Code : 18CHL17/CHL26	**No. of credits:** 0 : 0 : 1 (L-T-P)	**No. of lecture hour per week :** 2
Exam duration : 3 hours.	**CIE + SEE =** 50 + 50 = 100	**Total No. of Lab sessions :** 12

Sl. No.	Syllabus content
	PART-A
1	Potentiometric estimation of FAS using standard $K_2Cr_2O_7$ solution.
2	Colorimetric determination of Copper.
3	Conductometric estimation of acid mixture using standard NaOH solution.
4	Determination of pKa of a weak acid using pH meter.
5	Determination of viscosity coefficient of a given liquid using Ostwald's viscometer.
6	Flame photometric estimation of Sodium and Potassium in the given sample of water. (Demonstration)
	PART-B
7	Determination of Total Hardness of water using disodium salt of EDTA.
8	Determination of Calcium Oxide in the given cement by Rapid EDTA method.
9	Determination of percentage of Copper in the given brass solution using standard Sodium thiosulphate solution.
10	Determination of Iron in Hematite ore solution using Potassium dichromate crystals by external indicator method.
11	Determination of Chemical Oxygen Demand of the given industrial waste water sample.
12	Determination of Total Alkalinity of given water sample using standard Hydrochloric acid.(Demonstration)

References Books:
1. Laboratory manual in Engineering Chemistry Sudharani, Dhanpatrai Publishing Company.
2. Vogel's Text Book of Quantitative Chemical Analysis revised by G.H.Jeffery, J.Bassett, ,J.Mendham and R.C Denney.

VIRTUAL LAB LINK DETAILS:

- https://www.labster.com/chemistry-virtual-labs/
- https://youtu.be/OwZbw6Mhrqc
- https://youtu.be/UOLOsKZxi6Y

Subject Title : : COMPUTER PROGRAMMING LAB		
Subject Code : 18CSL17/27	**No. of Credits: : 1=0 : 0 : 1 (L-T-P)**	**No. of lecture hour/week : 03**
Exam Duration: 3 hrs	**Exam Marks: 100**	

Course objectives:
The objectives of this course are:
3) Provide a comprehensive study of the C programming language.
4) To learn and acquire art of computer programming.
5) Understand the syntax of data types, decision making, looping constructs, arrays, functions, structures and unions.

1.	Write A Program For Electricity Bill Tracking Different Categories Of Users, Different Slabs In Each Category. **(Using Nested If Else Statement)**

Domestic		Non-Domestic	
Range	Unit per charge	Range	Unit per charge
0 - 200	0.5	0 - 100	0.5
201 - 400	100 + 0.65	101 - 200	50 + 0.60
401 -600	230 + 0.80	201 - 300	100 + 0.70
601 and Above	390 + 1.00	301 and Above	200 + 1.00

b)Write a C program to compute the value for sine series

$$\sin x = \sum_{n=0}^{\infty} \frac{(-1)^n}{(2n+1)!} x^{2n+1} = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \cdots \text{ for all } x$$

2.	a) Write a C program to construct a pyramid of numbers. **(Using FOR LOOP)**

```
    1
   2 3
  4 5 6
```

```
       *
     *   *
   *   *   *
     *   *
       *
```

b) Consider physical education classes or sports classes back in school. Students Lined up in a random order in front of the teacher, who's put to the task of lining up all students in an ascending order of height. In this case every person's height is an element of the list.

Input : Total Number of students 'n', Height of each the student.(h1,h2,h3 upto hn)

Output : Sorted list

(BUBBLE SORT : With every pass that the teacher goes over the students, they slowly start standing in a more orderly fashion till all of them stand according to height.)

Print both the given array and the sorted array with suitable headings.

3.	The total distance travelled by vehicle in 't' seconds is given by distance = ut+1/2at2 where 'u' and 'a' are the initial velocity (m/sec.) and acceleration (m/sec2). Write C program to find the distance travelled at regular intervals of time given the values of 'u' and 'a'. The program should provide the flexibility to the user to select his own time intervals and repeat the calculations for different values of 'u' and 'a'. [Total distance$\rightarrow$s=(u*i)+(0.5*a*i*i)] **(Using for loop)** b) Searching for a book in the library. Sorted list is the well-arranged books in an alphabetical order. Our target element is the book we prefer to read. Instead of hopelessly running around in circles and ruffling through every rack to find our book we can apply this algorithm to find that book without breaking a sweat. All we need to do is determining the total number of racks, and then find the middle rack. If we don't find the book, then we accordingly determine whether to omit the first half of the racks or the second half. We repeat this process till we finally find our book or run out of racks to look in. Input: Total Number of books 'n', Books b1, b2, upto bn sorted in alphabetical order, book to be searched. Output: Book found or not. **(Using Binary Search)**
4.	a) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,- ,*, /, % and use **Switch Statement**) b) Consider you have a pile of electricity bills for the past year, and you want to arrange them in ascending order from staring from January. One approach might be to look through the pile until you find the bill for January and pull that out. Then look through the remaining

	pile until you find the bill for February and add that behind January. Proceed through the ever-shrinking pile of bills to select next one until you are done. **(Using Selection Sort)** Input: Total Number of bills 'n', Each month bill arranged in random order upto n. Output : Sorted list print both the given array and the sorted array with suitable headings.
5.	a) Write a program in C to evaluate the given polynomial f(x) = a4 x4 + a3 x3 + a2 x2 + a1 x1 + a0 for given value of x and the coefficients using Horner's method. b) Write A Menu Driven Program To Read 2 matrices A,B. Find the Trace and Norm of a matrix using **Functions.** i) To find trace of matrix ii) To find norm of a matrix
6.	a) Write a C program to generate Fibonacci series for a given value of N. Display the result with suitable messages. b) Write A Menu Driven Program To Read List Of Student Names with the following attributes Name,Branch,Section And Perform The Following Operations Using **structures**. i) To Print List Of Names ii) To Sort Them In Ascending Order
7.	a) Write a program for reading 'n'elements using pointer to an array and display the values using array. **(POINTERS)** b) Three people denoted by P1, P2, P3 intend to buy some rolls, buns, cakes and bread. Each of them needs these commodities in differing amounts and can buy them in two shops S1, S2. Which shop is the best for every person P1, P2, P3 to pay as little as possible? The individual prices and desired quantities of the commodities are given in the following tables:

Demanded quantity of foodstuff:

	roll	bun	cake	bread
P_1	6	5	3	1
P_2	3	6	2	2
P_3	3	4	3	1

Prices in shops S_1 and S_2:

	S_1	S_2
roll	1.50	1.00
bun	2.00	2.50
cake	5.00	4.50
bread	16.00	17.00

	MATRIX MULTIPLICATION
	Write a C program by considering 2 matrices A (M x N) and B (P x Q) that uses functions to perform the following: i. Reading data to p1, p2, p3 (Matrix A)ii. Reading data to s1, s2 (Matrix B) iii. Multiplication of Two Matrices(C=AXB)
	Note: In the practical examination the student has to select one question and both a, b should be executed. All the questions listed in the syllabus have to be included in the lots. The change of question has to be considered by deducting marks, provided the request is made for the same, within half an hour from the start of the examination.

Course Outcomes	Statements	Bloom's Level
CO1	Understand basics of computer programming, Write, compile and debug programs in C language.	L2
CO2	Design programs involving decision structures, loops and functions. Identify the type of looping constructs to be used and use 1D & 2D arrays for solving problems.	L3
CO3	Recognize different types of functions and string handling functions.	L2

Course Outcomes	POs												PSOs		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	1	-	-	-	-	-	-	-	-	-	3	2	-
CO2	3	3	3	-	-	-	-	-	-	-	-	-	3	3	-
CO3	3	3	3	-	-	-	-	-	-	-	-	-	3	3	-

KANNADA (for Kannada students) - 2020-2021		
Subject Code:18HS12/22	No. of Credits: 01	No of lecture hours per week: 2 Hrs
Exam Duration: 2 hours	Exam Marks: 50	Total No. of lecture hours: 26hrs

ಪತ್ರಿಕೆಯ ಹೆಸರು : ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ (ಕನ್ನಡ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ)

೧. ಡಾ.ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ–ವಿಶ್ರಾಂತ ಕುಲಪತಿಗಳು, ಕನ್ನಡ ವಿಶ್ವವಿದ್ಯಾಲಯ , ಹಂಪಿ,

೨. ಡಾ.ಎಲ್.ತಿಮ್ಮೇಶ – ಸಹಾಯಕ ಪ್ರಾಧ್ಯಾಪಕರು ಮತ್ತು ಮುಖ್ಯಸ್ಥರು

೩. ಪ್ರೊ.ವಿ.ಕೇಶವಮೂರ್ತಿ – ಶೈಕ್ಷಣಿಕ ಸಲಹೆಗಾರರು

Course Objective

೧. ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ನಾಡು,ನುಡಿ ಮತ್ತು ಸಂಸ್ಕೃತಿಗೆ ಸಂಬಂಧಿಸಿದ ಲೇಖನಗಳ ಬಗೆಗೆ ವಿವರಿಸಲಾಗುವುದು. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿಯಲ್ಲಿ ಸಂಸ್ಕೃತಿಯ ಅರ್ಥ, ಭಾರತೀಯ ಸಂಸ್ಕೃತಿ, ಧರ್ಮದ ಆಚರಣೆ,ಜೀವನ ಮೌಲ್ಯಗಳ ಬಗೆಗೆ ವಿವರಿಸಲಾಗುವುದು. ಕರ್ನಾಟಕ ಏಕೀಕರಣಕ್ಕೆ ಮಹನೀಯರು ನೀಡಿದ ಕೊಡುಗೆಗಳ ಬಗೆಗೆ ವಿವರಿಸಲಾಗುವುದು. "ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ" ದ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು.

೨. ಈ ಪಾಠದಲ್ಲಿ ಕಾವ್ಯ ಭಾಗ (ಆಧುನಿಕ ಪೂರ್ವ) ದ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ವಚನಗಳು, ಕೀರ್ತನೆಗಳು, ತತ್ವಪದಗಳ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಧುನಿಕ ಪೂರ್ವ ಕಾಲದಕಾವ್ಯ ಸಾಹಿತ್ಯದ ಬಗೆಗೆ ತಿಳಿಯಲು ಸಹಾಯವಾಗುತ್ತದೆ.

೩. ಈ ಪಾಠದಲ್ಲಿ ಕಾವ್ಯ ಭಾಗ (ಆಧುನಿಕ) ದ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ಆಧುನಿಕ ಕಾಲದ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು. ಕವಿಗಳು, ಕವನಗಳ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಜೀವನದ ಸಾರಾಂಶದ ಬಗೆಗೆ ತಿಳಿಯಲು ಸಹಾಯವಾಗುತ್ತದೆ.

೪. ಈ ಪಾಠದಲ್ಲಿ ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ, ವ್ಯಕ್ತಿ ಪರಿಚಯ, ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನದ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳು ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣದ ಜೊತೆಗೆ ವ್ಯಕ್ತಿಗಳು ಸಮಾಜಕ್ಕೆ ನೀಡಿದ ಕೊಡುಗೆ ಬಗೆಗೆ ತಿಳಿಯುತ್ತಾರೆ.

೫. ಈ ಪಾಠದಲ್ಲಿ ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನದ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ಕರಕುಶಲ ಕಲೆ ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನದ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ಕ ಮತ್ತು ಬ ಬರಹ ತಂತ್ರಾಂಶಗಳ ಬಗೆಗೆ, ಕನ್ನಡ ಕಂಪ್ಯೂಟರ್ ಶಬ್ದಕೋಶದ ಬಗೆಗೆ ತಿಳಿಸಲಾಗುವುದು. ತಾಂತ್ರಿಕ ಪದಕೋಶ ಮತ್ತು ತಾಂತ್ರಿಕ ಹಾಗೂ ಪಾರಿಭಾಷಿಕ ಕನ್ನಡ ಪದಗಳ ಬಗೆಗೆ ವಿವರಿಸಲಾಗುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ತಂತ್ರಾಂಶದ ಬಗೆಗೆ ತಿಳಿಯಲು ಸಹಾಯವಾಗುತ್ತದೆ.

ಪಾಠಸಂಖ್ಯೆ	ವಿಷಯ	ಒಟ್ಟು ತರಗತಿಗಳ ಸಂಖ್ಯೆ
1.	ಕನ್ನಡ ನಾಡು,ನುಡಿ ಮತ್ತು ಸಂಸ್ಕೃತಿಗೆ ಸಂಬಂಧಿಸಿದ ಲೇಖನಗಳು	6
2.	ಕಾವ್ಯಭಾಗ (ಆಧುನಿಕ ಪೂರ್ವ)	5
3.	ಕಾವ್ಯಭಾಗ(ಆಧುನಿಕ)	5
4.	ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿ ಪರಿಚಯ, ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ	5
5.	ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ	5

Course Outcomes

೧. ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳು ಕನ್ನಡ ನಾಡು,ನುಡಿ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುವರು. ಇದರಿಂದ ನಮ್ಮ ಸಂಸ್ಕೃತಿಯ ಆಚರಣೆಯ ಕುರಿತು ಅಧ್ಯಯನ ಮಾಡುವರು. ಕರ್ನಾಟಕ ಸಂಸ್ಕೃತಿಯಲ್ಲಿ ಸಂಸ್ಕೃತಿಯ ಅರ್ಥ, ಭಾರತೀಯ ಸಂಸ್ಕೃತಿ, ಧರ್ಮದ ಆಚರಣೆ,ಜೀವನ ಮೌಲ್ಯಗಳ ಬಗೆಗೆ ತಿಳಿಯುವರು. ಕರ್ನಾಟಕ ಏಕೀಕರಣಕ್ಕೆ ಮಹನೀಯರು ನೀಡಿದ ಕೊಡುಗೆಗಳ ಬಗೆಗೆ ಅರಿತು ಅವರುಗಳು ಕೂಡ ಕನ್ನಡ ಸಂಸ್ಕೃತಿಯನ್ನು ಅಭಿವೃದ್ಧಿಪಡಿಸುವಲ್ಲಿ ಪ್ರಯತ್ನಿಸುವರು. "ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ" ದ ಮಹತ್ವ ತಿಳಿಯುವರು.

೨. ಈ ಪಾಠದಲ್ಲಿ ಕಾವ್ಯ ಭಾಗ (ಆಧುನಿಕ ಪೂರ್ವ) ದ ವಿಷಯಗಳನ್ನು ತಿಳಿಯುವರು. ವಚನಗಳು, ಕೀರ್ತನೆಗಳು, ತತ್ವಪದಗಳ ಬಗೆಗೆ ಅರಿವು ಮೂಡಿಸಿಕೊಳ್ಳುವರು . ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಧುನಿಕ ಪೂರ್ವ ಕಾಲದಕಾವ್ಯ ಸಾಹಿತ್ಯದ ಬಗೆಗೆ ಹೆಚ್ಚು ತಿಳಿಯಲು ಸಹಾಯವಾಗಿ ತಮ್ಮ ಸ್ವಂತಿಕೆಯ ಮೂಲಕ ಕವನಗಳನ್ನು ರಚಿಸುವುದನ್ನು ಅಭ್ಯಸಿಸುವರು.

೩. ಈ ಪಾಠದಲ್ಲಿ ಕಾವ್ಯ ಭಾಗ (ಆಧುನಿಕ) ದ ಬಗೆಗೆ ತಿಳಿಯುವರು. ಆಧುನಿಕ ಕಾಲದ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ ವಿಷಯಗಳ ಬಗೆಗೆ ತಿಳಿಯುವರು. ಕವಿಗಳು, ಕವನಗಳ ಅಭಿರುಚಿಯ ಬಗೆಗೆ ಗಮನ ಹರಿಸುವರು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಜೀವನದ ಸಾರಾಂಶದ ಜೊತೆಗೆ ತಮ್ಮದೇ ಆದ ಸಾಹಿತ್ಯ ಅನುಭವವನ್ನು ಬೆಳೆಸಿಕೊಳ್ಳುವರು.

೪. ಈ ಪಾಠದಲ್ಲಿ ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣ, ವ್ಯಕ್ತಿ ಪರಿಚಯ, ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನದ ಬಗೆಗೆ ತಿಳಿಯುವರು . ತಾಂತ್ರಿಕ ಶಿಕ್ಷಣದ ಬಗೆಗೆ ತಿಳಿಯುವರು. ಜೊತೆಗೆ ವ್ಯಕ್ತಿಗಳು ಸಮಾಜಕ್ಕೆ ನೀಡಿದ ಕೊಡುಗೆಯನ್ನು ಅರಿತು ತಾವು ಕೂಡ ಸಮಾಜದ ಏಳಿಗೆಗಾಗಿ ಶ್ರಮಿಸುವ ಪ್ರಯತ್ನ ಮಾಡುವರು.

೫. ಈ ಪಾಠದಲ್ಲಿ ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನದ ಬಗೆಗೆ ತಿಳಿಯುವರು. ಕರಕುಶಲ ಕಲೆ ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನದ ಬಗೆಗೆ ಅರಿತುಕೊಳ್ಳುವರು. ಕ ಮತ್ತು ಬ ಬರಹ ತಂತ್ರಾಂಶಗಳ ಜೊತೆಗೆ ಕೀಲಿಮಣೆಯ ಪ್ರಯೋಜನವನ್ನು ತಿಳಿಯುವರು. ಕನ್ನಡ ಕಂಪ್ಯೂಟರ್ ಶಬ್ದಕೋಶದ ಅಂಶಗಳ ಬಗೆಗೆ ತಿಳಿಯುವರು.

ತಾಂತ್ರಿಕ ಪದಕೋಶ ಮತ್ತು ತಾಂತ್ರಿಕ ಹಾಗೂ ಪಾರಿಭಾಷಿಕ ಕನ್ನಡ ಪದಗಳ ಅರ್ಥ ತಿಳಿಯುವರು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ತಂತ್ರಾಂಶದ ಬಗೆಗೆ ಹೆಚ್ಚು ತಿಳಿಯುವ ಪ್ರಯತ್ನ ಮಾಡುವರು.

KANNADA (for Non-Kannada & Non Karnataka students) - 2020-2021		
Subject Code: 18HS12/22	**No. of Credits: 01**	**No of lecture hours per week: 2 Hrs**
Exam Duration: 2 hours	**Exam Marks: 50**	**Total No. of lecture hours: 26hrs**

ಪಠ್ಯದ ಹೆಸರು : ಬಳಕೆ ಕನ್ನಡ (ಕನ್ನಡೇತರ ಮತ್ತು ಹೊರನಾಡು ಕನ್ನಡ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ)

೧. ಡಾ.ಪಿ.ಪಾಂಡುರಂಗ ಬಾಬು – ಪ್ರಾಧ್ಯಾಪಕರು, ಕನ್ನಡ ಭಾಷಾಧ್ಯಯನ ವಿಭಾಗ,
    ಕನ್ನಡ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಹಂಪಿ
೨. ಡಾ.ಎಲ್.ತಿಮ್ಮೇಶ – ಸಹಾಯಕ ಪ್ರಾಧ್ಯಾಪಕರು ಮತ್ತು ಮುಖ್ಯಸ್ಥರು
೩. ಪ್ರೊ.ವಿ.ಕೇಶವಮೂರ್ತಿ – ಶೈಕ್ಷಣಿಕ ಸಲಹೆಗಾರರು

Course Objective

೧. ವ್ಯವಹಾರಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಭಾಷೆಯ ಅಡಿಪಾಯದ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು. ಈ ಪಾಠದಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಂವಹನ ಮಾಧ್ಯಮದ ಜೊತೆಗೆ ಬಗೆಗೆ ವ್ಯವಹಾರ ಜ್ಞಾನವನ್ನು ಹೆಚ್ಚಿಸಲಾಗುತ್ತದೆ.

೨. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ಭಾಷೆಯ ಪರಿಚಯ,ಕನ್ನಡ ಅಕ್ಷರಮಾಲೆ, ಉಚ್ಚಾರಣೆ, ಕಾಗುಣಿತ,ಒತ್ತಕ್ಷರಗಳು, ಅಕ್ಷರಗಳ ಜೋಡಣೆ ಮತ್ತು ಭಾಷಾಂತರದ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು.

೩. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ವ್ಯಾಕರಣದ ಪರಿಚಯ, ವಚನ ಪರಿಚಯ, ಲಿಂಗ ಪರಿಚಯ, ವಿರುದ್ಧ ಪದಗಳು, ಕನ್ನಡ ಅಂಕಿಗಳು, ಓದುವ ಕೌಶಲ್ಯ ಮತ್ತು ಬರೆಯುವ ಕೌಶಲ್ಯದ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು. ಭಾಷಾಂತರ ಪದಗಳು ಮತ್ತು ವ್ಯಕ್ತಿ ಸಂಬಂಧಗಳ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು.

೪. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಾಮಪದದ ಪರಿಚಯ,ಸರ್ವನಾಮ,ಗುಣವಾಚಕ, ಮತ್ತು ಕ್ರಿಯಾಪದಗಳ ಬಗೆಗ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು. ಭಾಷಾಂತರದ ಜೊತೆಗೆ ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ವ್ಯಾಕರಣಾಂಶದ ಬಗೆಗೆ ಹೆಚ್ಚು ತಿಳಿದುಕೊಳ್ಳಲು ಸಹಾಯವಾಗುತ್ತದೆ.

೫. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಶಬ್ದಕೋಶಗಳ ಬಳಕೆ, ಸಂವಹನ ಮಾಧ್ಯಮದ ಬಗೆಗೆ ಸಂಭಾಷಣೆಗಾಗಿ ಕನ್ನಡ ಪದಗಳ ಪರಿಚಯ, ವ್ಯಾಕರಣದ ಚಟುವಟಿಕೆಗಳ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು. ಮತ್ತು ಮೌಖಿಕ ಸಾಮರ್ಥ್ಯದ ಬಗೆಗೆ ತಿಳಿಸಿಕೊಡಲಾಗುವುದು.

Lesson No.	Subject	Total No of Classes
1.	೧.ವೈಯಕ್ತಿಕ,ಸ್ವಾಮ್ಯಸೂಚಕ/ಸಂಬಂಧಿತ ಸರ್ವನಾಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು 1. Personal Pronouns, Possessive Forms, Interrogative words ೨. ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮಪದಗಳು 2. Possessive forms of nouns, dubitive question and Relative nouns ೩. ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು 3. Qualitative, Quantitative and Colour Adjectives, Numerals ೪. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು – ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ 4. Predictive Forms, Locative Case	6
2	೫. ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು 5. Dative Cases, and Numerals ೬. ಸಂಖ್ಯಾವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು 6. Ordinal numerals and Plural markers ೭. ನ್ಯೂನ/ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು ಮತ್ತು ವರ್ಣ ಗುಣವಾಚಕಗಳು 7. Defective/Negative Verbs and Colour Adjectives ೮. ಅಪ್ಪಣೆ/ಒಪ್ಪಿಗೆ,ನಿರ್ದೇಶನ,ಪ್ರೋತ್ಸಾಹ ಮತ್ತು ಒತ್ತಾಯ ಅರ್ಥರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು 8. Permission, Commands, encouraging and Urging words (imperative words and sentences)	5
3	೯. ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು 9. Accusative Cases and Potential Forms used in General Communication ೧೦."ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು 10. Helping Verbs "iru and iralla", Corresponding Future and Negation Verbs	5

	೧೧. ಹೋಲಿಕೆ,ಸಂಬಂಧಸೂಚಕ ಮತ್ತು ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ 11. Comparative, Relationship, Identification and Negation Words ೧೨. ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು 12. Different types of forms of Tense, Time and Verbs	
4	೧೩. ದ್,ತ್,–ತು,–ಇತಿ,–ಆಗಿ–ಅಲ್ಲ,–ಗ್,–ಕ್,ಇದೆ,ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ ಭೂತ,ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ 13. Formation of Past, Future and Present Tense Sentences with Verb Forms ೧೪. ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮತ್ತು ರಾಜ್ಯದ ಬಗ್ಗೆ ಕುರಿತಾದ ಇತರೆ ಮಾಹಿತಿಗಳು 14. Karnataka State and General Information about the State ೧೫. ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ 15. Kannada Language and Literature	5
5	೧೬. ಭಾಷೆ ಕಲಿಯಲು ಏನನ್ನು ಮಾಡಬೇಕು ಮತ್ತು ಮಾಡಬಾರದು16. Do's and Don'ts in Learning a Language ೧೭/17. Kannada Language Script Part-1 ೧೮. ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಪದಗಳು 18. Kannada Vocabulary List :Kannada words in Conversation	5

Course Outcomes

೧. ವ್ಯವಹಾರಿಕ ಕನ್ನಡ ಪಠ್ಯಪುಸ್ತಕದಲ್ಲಿ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಭಾಷೆಯ ಅಡಿಪಾಯದ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ. ಈ ಪಾಠದಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಂವಹನ ಮಾಧ್ಯಮದ ಜೊತೆಗೆ ಬಗೆಗೆ ವ್ಯವಹಾರ ಜ್ಞಾನವನ್ನು ಹೆಚ್ಚಿಸಿಕೊಳ್ಳುತ್ತಾರೆ

೨. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ಭಾಷೆಯ ಪರಿಚಯ,ಕನ್ನಡ ಅಕ್ಷರಮಾಲೆ, ಉಚ್ಛಾರಣೆ, ಕಾಗುಣಿತ, ಒತ್ತಕ್ಷರಗಳು, ಅಕ್ಷರಗಳ ಜೋಡಣೆ ಮತ್ತು ಭಾಷಾಂತರದ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ.

ಇ. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಕನ್ನಡ ವ್ಯಾಕರಣದ ಪರಿಚಯ, ವಚನ ಪರಿಚಯ, ಲಿಂಗ ಪರಿಚಯ, ವಿರುದ್ಧ ಪದಗಳು, ಕನ್ನಡ ಅಂಕಿಗಳು, ಓದುವ ಕೌಶಲ್ಯ ಮತ್ತು ಬರೆಯುವ ಕೌಶಲ್ಯದ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ. ಭಾಷಾಂತರ ಪದಗಳು ಮತ್ತು ವ್ಯಕ್ತಿ ಸಂಬಂಧಗಳ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ.

ಈ. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ನಾಮಪದದ ಪರಿಚಯ, ಸರ್ವನಾಮ, ಗುಣವಾಚಕ, ಮತ್ತು ಕ್ರಿಯಾಪದಗಳ ಬಗೆಗ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ. ಭಾಷಾಂತರದ ಜೊತೆಗೆ ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳು, ವ್ಯಾಕರಣಾಂಶದ ಬಗೆಗೆ ಹೆಚ್ಚು ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ.

ಉ. ಈ ಪಾಠಗಳಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಶಬ್ಧಕೋಶಗಳ ಬಳಕೆ, ಸಂವಹನ ಮಾಧ್ಯಮ ಹಾಗೂ ಸಂಭಾಷಣೆಗಾಗಿ ಕನ್ನಡ ಪದಗಳ ಪರಿಚಯ, ವ್ಯಾಕರಣದ ಚಟುವಟಿಕೆಗಳ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ. ಮತ್ತು ಮೌಖಿಕ ಸಾಮರ್ಥ್ಯದ ಬಗೆಗೆ ತಿಳಿದುಕೊಳ್ಳುತ್ತಾರೆ.

CAREER DEVELOPMENT SKILLS – I semester (2020-21)		
Subject Code: 18HS13	**Mandatory Course (CGPC)**	**No of lecture hours per week: 2 Hrs**
Exam Duration:	**Exam Marks: NIL**	**Total No. of lecture hours: 26 hrs per semester**

CGPC – Career Guidance and Placement Cell

COURSE OBJECTIVE:

1. The lessons under this unit are designed to enable the students to plan their career on correct measures and motivate them to set their goals on prior basis.

2. The lessons under this unit aims to develop the personality skills of the students and teach them to lead a corporate discipline nurture.

3. The main goal of this unit is to help students to learn about the culture of corporate world. This unit helps them to get groomed with professional ethics.

4. This unit is designed to give the awareness to the students about the job market to prepare themselves at their own pace and potential. This unit also teaches them about the managing aspects of time and stress.

5. This unit will help students to have brief description about the higher studies courses, Competitive exams and also gives introduction to entrepreneur clauses.

Unit no	Syllabus content	Hours/COs
1	1. Career Planning 2. Goal Settings	5 CO1
2	1. Motivation - I 2. Personality Effectiveness 3. Building Personality and Discipline	5 CO2
3	1. Grooming, hygiene and Cleanliness 2. Attitudes 3. Manners and Behaviour	6 CO3
4	1. Self- Awareness & Self Confidence 2. Time Management 3. Stress Management 4. Emotional Intelligence	5 CO4
5	1. Introduction to Higher Education, Competitive exams 2. Introduction to Entrepreneurship	5 CO5

COURSE OUTCOME:

1.   The students will have learnt about the overview of their goals and also gets to know diversities in the field of their career planning.

2.   The student will have developed and improved their personal and professional effectiveness.

3.   At the end of this unit, students will have deploy themselves about the corporate culture.

4.   After the completion of this unit students will understand the stress, time and emotional management. Also they will learn about the overcoming the fear and uncomfortable situations such as Public speaking.

5.   After the completion of this unit, students will gain knowledge about the higher education, types of competitive exams and the entrepreneur assertiveness.

REFERENCE:

1.   Soft skills for Managers by Dr. T. KALYANA CHAKRAVATHI

2.   Personal Development and Soft Skills by BARUN K MITRA, Oxford Higher Education

3.   The Emotionally Intelligent Workplace by DANIEL GOLEMAN.

4.   Communication skills and soft skills an integrated approach by E. SURESH KUMAR, P. SREEHARI, J SAVITHRI.

5.   Top Talking in English (international communication skills) by CHARLES T. RAJENDRA

6.   Soft skills by RAJ LAKSHMI SURYAVANSHI, Gurucool Publishing.

	CAREER DEVELOPMENT SKILLS (2) – II semester (2020-21)		
	Subject Code: 18HS23	**Mandatory Course (CGPC)**	**No of lecture hours per week: 2 Hrs**
	Exam Duration:	**Exam Marks: NIL**	**Total No. of lecture hours: 26 hrs per semester**

CGPC – Career Guidance and Placement Cell

COURSE OBJECTIVE:

7. The lessons under this unit are designed to enable the students to develop their interpersonal skills and motivation skills.

8. LS Skills: The lessons under this unit aims to develop the Listening and Speaking skills of the students and teach them to lead a corporate discipline nurture.

9. RW skills: These lessons will help students make inferences and predictions about spoken discourse and by utilizing digital literacy tools their RW skills can be enhanced.

10. The main goal of this unit is to help students to overcome the fear of speaking in both personal and professional culture and it also focuses on the presenting the topics with confidence.

11. This unit is completed dedicated to provide the students about the team building activities and it also encourages them to give a different aspect on creative thinking.

Unit no	Syllabus content	Hours/COs
1	1. **Motivation- II** 2. **Interpersonal Skills**	5 CO1
2	1. **Listening Skills** 2. **Conversation Skills**	5 CO2
3	1. **Reading Skills** 2. **Writing Skills**	5 CO3
4	1. **Presentation Speaking skills** 2. **Public Speaking skills** 3. **SWOT Analysis**	5 CO4

5	1. **Team Building**
	 2. **Activity Sessions**
	     > **Debate**
	     > **Picture Connector**
		6
		 CO5

COURSE OUTCOME:

1.   The students will have learnt about the way of quality communication with the co-workers and it will also help to build a strong social relationship with outside society.

2.   The student will have develop listening and conversing skills with respect to adaptable situations.

3.   At the end of this unit, students will have deploy themselves in the active thinking and also learns about the effective usage of words.

4.   After the completion of this unit students will learn to deliver the presentation in a more powerful and persuasive way. It also improves the clarity and confidence of the students.

5. After the completion of this unit, students will learn about the synchronization with the workmate and also gives them an opportunity to unlock their individual potentials.

REFERENCE:

01. Soft skills for Managers by Dr. T. KALYANA CHAKRAVATHI

02. Personal Development and Soft Skills by BARUN K MITRA, Oxford Higher Education

03. The Emotionally Intelligent Workplace by DANIEL GOLEMAN.

04. Communication skills and soft skills an integrated approach by E. SURESH KUMAR, P. SREEHARI, J SAVITHRI.

05. Top Talking in English (international communication skills) by CHARLES T. RAJENDRA

06. Soft skills by RAJ LAKSHMI SURYAVANSHI, Gurucool Publishing

07. Communication skills and soft skills an integrated approach by E. SURESH KUMAR, P. SREEHARI, J SAVITHRI.

08. Soft skills an integrated approach to maximize personality by SANGEETHA SHARMA, GAJENDRA SINGH CHAUHAN, and Wiley Publishing.

Dr. AMBEDKAR INSTITUTE OF TECHNOLOGY, BENGALURU - 560 056.
REVISED ACADEMIC CALENDAR OF EVENTS, (I Semester BE)
(14.12.2020 to 17.04.2021)

ODD SEMESTER: 2020-21

DEC – APR 2021

Days / Week No	SUN	MON	TUE	WED	THU	FRI	SAT- (*All Saturdays are full working day)
W01		Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
W02	Dec-20	Dec-21: Induction Program	Dec-22: Induction Program	Dec-23: Induction Program	Dec-24: Induction Program	Dec-25: Holiday: Christmas	Dec-26: Induction Program
W03	Dec-27	Dec-28: Induction Program	Dec-29	Dec-30	Dec-31	Jan-01	Jan-02
W04	Jan-03	Jan-04	Jan-05	Jan-06	Jan-07	Jan-08	Jan-09
W05	Jan-10	Jan-11	Jan-12	Jan-13	Jan-14: Holiday: Makara Sankranti	Jan-15	Jan-16
W06	Jan-17	Jan-18	Jan-19	Jan-20	Jan-21	Jan-22	Jan-23
W07	Jan-24	Jan-25	Jan-26: Holiday: Republic Day	Jan-27	Jan-28	Jan-29: CIE-1	Jan-30 : CIE-1
W08	Jan-31	Feb-01: CIE-1	Feb-02: CIE-1	Feb-03	Feb-04	Feb-05	Feb-06
W09	Feb-07	Feb-08	Feb-09	Feb-10	Feb-11	Feb-12	Feb-13
W10	Feb-14	Feb-15	Feb-16	Feb-17	Feb-18	Feb-19	Feb-20
W11	Feb-21	Feb-22	Feb-23	Feb-24	Feb-25	Feb-26	Feb-27
W12	Feb-28	Mar-01: CIE-2	Mar-02: CIE-2	Mar-03: CIE-2	Mar-04: CIE-2	Mar-05	Mar-06
W13	Mar-07	Mar-08	Mar-09	Mar-10	Mar-11: Holiday: Maha Shivarathri	Mar-12	Mar-13
W14	Mar-14	Mar-15	Mar-16	Mar-17	Mar-18	Mar-19	Mar-20
W15	Mar-21	Mar-22	Mar-23	Mar-24: Makeup CIE	Mar-25: Makeup CIE	Mar-26 : Makeup CIE	Mar-27: Makeup CIE
W16	Mar-28	Mar-29: CIE-Practical	Mar-30: CIE-Practical	Apr-31: CIE-Practical	Apr-01: CIE-Practical	Apr-02: Holiday: Good Friday	Apr-03: CIE-Practical
W17	Apr-04	Apr-05	Apr-06	Apr-07	Apr-08	Apr-09	Apr-10
W18	Apr-11	Apr-12: Submission of list of students having attendance <75% to exam section and between 75% & 85% with documents for Attendance Condonation to the Dean's office	Apr-13: Holiday: Ugadi	Apr-14: Holiday: Ugadi	Apr-15: Declaration of list of NSA by Exam section	Apr-16: Declaration of Final CIE & NSC list by Exam section	Apr-17: Last working Day: Distribution of Hall Tickets for Eligible candidates in the Dept./ Last day for withdrawal of Course/s (W Grade) through HOD & Submission to Exam Section through Dean

Study Holidays: 14-04-2021 to 17-04-2021

SEE EXAMS: 18-04-2021 to 03-05-2021

Commencement of EVEN Semester: 05-05-2021

Dean (Academic)
Dr. Ambedkar Institute of Technology
Bangalore - 560 056.

PRINCIPAL
Dr. Ambedkar Institute of Technology
Bengaluru - 560 056.