Visvesvaraya Technological University, Belagavi

Bachelor of Science (B.Sc.)

Scheme of Teaching and Examinations 2021 – 2025

Outcome Based Education(OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2021 – 22)

I SEMESTER (Common to all Specialisations)

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical	Self-Study Component	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	DC	21MAT11	Differential Calculus and Linear Algebra	Maths	3	2	--		03	50	50	100	4
2	DC	21PHY12	Mechanics and Properties of Matter	Physics	2	2	--		03	50	50	100	3
3	DC	21CHE13	Chemistry -1	Chemistry	3	--	--		03	50	50	100	3
4	SEC	21PSP14	Problem Solving through Programming	Computer	3	--	--		03	50	50	100	3
5	DC	21 PHYL15	Mechanics Laboratory	Physics	1	--	2		03	50	50	100	2
6	DC	21CHEL16	Chemistry Laboratory - 1	Chemistry	1	--	2		03	50	50	100	2
7	SEC	21CPL17	Computer Programming Laboratory	Computer	1	--	2		03	50	50	100	2
8	AEC	21KSK18	Samskruthika Kannada	HSMC	3	--	--		03	50	50	100	3
		21KBK18	Balake Kannada										
9	AEC	21ENG19	Communicative English - 1	HSMC	1	1	1		03	50	50	100	2
				Total	**19**	**05**	**07**		**27**	**450**	**450**	**900**	**24**

Note:

(i) DC: Discipline Course, SEC: Skill Enhancement Course, AEC: Ability Enhancement Course, HSMC: Humanity, Social Science and Management.

(ii) 21KSK18 Samskruthika Kannada is for students who speak, read and write Kannada and 21KBK18 Balake Kannada is for non-Kannada speaking, reading and writing students.

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(Effective from the academic year 2021 – 22)

II SEMESTER (Common to all Specialisations)

Sl. No	Course and Course Code		Course Title	Teaching Department	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical	Self-Study Component	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	DC	21MAT21	Integral Calculus and Ordinary Differential Equations	Maths	3	2	--		03	50	50	100	4
2	DC	21PHY22	Thermal Physics	Physics	2	2	--		03	50	50	100	3
3	DC	21CHE23	Chemistry - 2	Chemistry	3	--	--		03	50	50	100	3
4	DC	21MATL24	Mathematics Laboratory using Python	Maths	1	--	2		03	50	50	100	2
5	DC	21 PHYL25	Thermal Physics Laboratory	Physics	1	--	2		03	50	50	100	2
6	DC	21CHEL26	Chemistry Laboratory -2	Chemistry	1	--	2		03	50	50	100	2
7	AEC	21KSS27	Sahithya Sinchana	HSMC	3	--	--		03	50	50	100	3
		21KKD27	Karnataka Darshana										
8	AEC	21ENG28	Communicative English - 2	HSMC	1	1	1		03	50	50	100	2
9	AEC	21AEC291	Environmental Studies	Interdiscip-linary	2	--	--		03	50	50	100	2
10	SEC	21UHV292	Universal Human Values		2	--	--		03	50	50	100	2
				Total	**20**	**05**	**07**		**27**	**500**	**500**	**900**	**25**

Note:

(1) **(i)** DC: Discipline Course, SEC: Skill Enhancement Course, AEC: Ability Enhancement Course, HSMC: Humanity and Social Science.
(ii) 21KSS27 Sahithya Sinchana is for students who have studied 21KSK18 Samskruthika Kannada and 21KKD27 Karnataka Darshana is for for students who have studied 21KBK18 Balake Kannada.

(2) **Summer Internship – 1**
All students admitted shall have to undergo a mandatory summer internship of 03 weeks duration during the intervening vacation of II and III semesters. Summer internship shall include inter and intra institutional activities.
A university viva voce examination shall be conducted during III semester and the prescribed credit shall be included in the III semester.
The summer internship -1 shall be considered as a head of passing and shall be considered for vertical progression and for the award of the degree. Those who do not take up/complete the internship shall be declared fail and shall have complete the subsequent examination after satisfying the internship requirements.

I Semester

Differential Calculus and Linear Algebra			
Course Code	**21MAT11**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	4:1:0:1	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	3 hours

Course Learning Objectives

- Calculate the limit, examine the continuity, and understand the geometrical interpretation of differentiability.
- Understand the consequences of various mean value theorems.
- Draw the curves in Cartesian and polar coordinate systems.
- Understand conceptual variations while advancing from one variable to several variables in calculus.
- Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix using rank.
- Find eigenvalues and corresponding eigenvectors for a square matrix.

Prerequisites: The students are aware of the basic knowledge of Trigonometry, Differentiation for understanding differential calculus.
Matrices, Determinants and system of simultaneous linear equations are required to learn Linear Algebra.

Pedagogy (General Instructions):
These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. In addition to the traditional lecture method, different types of innovative teaching methods may be adopted so that the delivered lessons shall develop student's theoretical and applied mathematical skills.
2. State the need for Mathematics with Engineering Studies and Provide real-life examples.
3. Support and guide the students for self–study.
4. You will also be responsible for assigning homework, grading assignments and quizzes, and documenting students' progress.
5. Encourage the students for group learning to improve their creative and analytical skills.
6. Show short related video lectures in the following ways:
   - As an introduction to new topics (pre-lecture activity).
   - As a revision of topics (post-lecture activity).
   - As additional examples (post-lecture activity).
   - As an additional material of challenging topics (pre-and post-lecture activity).
   - As a model solution of some exercises (post-lecture activity).

Module-1: Differential Calculus 1	
Recapitulation of Limit and Continuity, Differentiability of functions **(Self Learning).** **Successive differentiation:** n^{th} derivatives of the functions: e^{ax}, $(ax + b)^n$, log(ax+b), sin(ax + b), cos(ax+b), e^{ax}sin(bx + c), e^{ax}cos(bx + c) – Problems. Leibnitz theorem (with proof) and its applications. **Mean value theorems:** Rolle's Theorem (statement only), Lagrange's mean value theorem, Cauchy's mean value theorem, Taylor's theorem. Taylor's and Maclaurin's series for functions of one variable. Problems. **Indeterminate forms** – L-Hospital's rule, Evaluation of indeterminate forms. **(RBT Levels: L1 and L2)**	
Pedagogy	Chalk and talk method/PowerPoint Presentation
Module-2: Differential Calculus 2	
Polar Coordinates - angle between the radius vector and the tangent, angle of intersection of curves(polar form), length of the perpendicular from pole on the tangent, pedal equations. Derivative of an arc in Cartesian, Polar and Parametric forms. Curvature of plane curves- Formula for the radius of curvature in Cartesian, parametric, polar, and in pedal forms, Centre of Curvature, Evolutes. **Self-Study:** Involutes **(RBT Levels: L1 and L2)**	
Pedagogy	Chalk and talk method/PowerPoint Presentation
Module-3: Partial Differentiation	
Partial Differentiation: Functions of two or more variables –Explicit and implicit functions, Partial derivatives – First and higher-order derivatives. Homogeneous functions – Euler's theorem, Total derivatives and differentiation, Differentiation of implicit functions and composite functions, Jacobian, Problems. Taylor's series and Maclaurin's series for functions of two variables, maxima-minima of the function of two variables. **Self-Study:** Errors and approximations. **(RBT Levels: Ll and L2)**	
Pedagogy	Chalk and talk method/PowerPoint Presentation
Module-4: Linear Algebra 1	
Self-Study: Related definitions & operations on matrices. **Matrices** Elementary row and column transformations (operations), equivalent matrices. Row-reduced echelon form, Normal form of a matrix, Rank of a matrix, Problems. Homogeneous and Non – Homogeneous system of linear equations and Consistency. Solutions of system of linear equations. Gauss elimination method, Gauss Jordan method, LU decomposition method – Crout's method. **Self-Study:** Cholesky's method **(RBT Levels: L1 &L2)**	
Pedagogy	Chalk and talk method/PowerPoint Presentation
Module-5: Linear Algebra 2	
Eigenvalues and Eigenvectors of a square matrix of order 2 and 3. Standard properties, Matrix polynomial, Cayley-Hamilton theorem (with proof). Finding A^{-1}, A^{-2}, A^2, A^3, A^4 and Problems. Linear transformations. Diagonalization of a square matrix. Quadratic forms- reduction to canonical form. **Self-Study:** Nature of quadratic form.	

(RBT Levels: L1 & L2)	
Pedagogy	Chalk and talk method/PowerPoint Presentation

Course outcome (Course Skill Set)

After successfully completing the course, the student will have a good understanding of the following topics and their applications:

- Apply the knowledge of n^{th} derivatives, Mean value theorems and power series expansions.
- Apply the knowledge of differentiation to the problems related to polar curves and applications to determine the curvature.
- Learn the notion of partial differentiation to understand the nature of multivariate functions and to solve the problems related to composite functions and Jacobian.
- Make use of matrix theory for testing the consistency of the system using rank and solving the system of linear equations.
- Compute the eigenvalues and eigenvectors required for the matrix diagonalization process.

Assessment Details (both CIE and SEE)

(Methods of CIE need to define topic wise i.e.- MCQ, Quizzes, Open book test or Seminar)
The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (3 Hours duration) and then it is reduced to 50. Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, Assignment, Report writing etc.
2. The class teacher has to decide the topic for the closed book test, open-book test, Written Quiz and Seminar. In the beginning, only the teacher has to announce the methods of CIE for the subject.
3. 10 marks weightage has to be given for **Self-Study component** (Via assignment / seminar / test).

Semester End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.
3. The students have to answer 5 full questions, selecting one full question from each module

Books recommended:

1. G.B. Thomas and R.L. Finney, Calculus, Pearson edition, 2007.
2. H. Anton, I. Birens and S. Davis, Calculus, John Wiley and Sons, Inc., 2002.
3. Serge Lang – First Course in Calculus
4. Lipman Bers – Calculus, Volumes 1 and 2
5. N. Piskunov – Differential and Integral Calculus
6. A. R. Vasista, Differential Calculus, Krishna Series, 2003
7. B. S. Vatssa, Theory of Matrices, 2nd ed., New Delhi: New Age International Publishers., 2007.
8. S. Narayan and P.K. Mittal, Textbook of Matrices, 10th ed. New Delhi: S Chand and Co. Ltd, 2004.

9. A R Vashista, Matrices, Krishna Prakashana Mandir, 2003.

Web links and Video Lectures (e-Resources):

- http://.ac.in/courses.php?disciplineID=111
- http://www.class-central.com/subject/math(MOOCs)
- http://academicearth.org/
- VTU EDUSAT PROGRAMME-20

Activity-Based Learning (Suggested Activities in Class)/ Practical Based learning

- Quiz
- Group assignment and
- Seminars

I Semester

Mechanics and Properties of Matter			
Course Code	21PHY12	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	(2L+2T+0P+0S)	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course objectives:
After going through the course, the student will be able

- To understand the perception of linear momentum, angular momentum, moment of Inertia, simple hormonic motion, Gravitational laws and elasticity.
- Apply the concept of momentum in rocket propulsion, moment of inertia in daily life, resonance phenomena for tuning system, Newton's law of gravitation to find the force between two objects, elasticity to find strength of materials.
- Analyse the properties of matter for different applications in physical sciences.
- Evaluation of numerical problems.

Pedagogy (General Instructions)
These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. In addition to traditional lecture methods alternative effective teaching methods could be adopted to attain the outcomes.
2. **U**se Power point/Videos/Animations to explain various concepts.
3. Encourage for group discussion in the classes.
4. Ask some creative and higher order thinking questions in classes which helps critical thinking.
5. Show the different ways to solve the same problem this helps the students to come with their own creativity.
6. To improve the understanding level of every student, confer how every concept can be applied to the real world.

Module-1

Linear Momentum & Angular Momentum: **08 Hours**

Definition of Linear Momentum, Law of conservation of linear momentum for a system of particles, Centre of mass of a system of particles, Position coordinates of the Centre of Mass, Motion of centre of mass, collision between two particles which stick together (inelastic collision) and do not stick together (elastic collision) in laboratory frame of reference (One Dimensional), Conservation of linear momentum in case of variable mass: examples i) Single stage rocket (expression for velocity neglecting the weight) ii) Double stage rocket, , Numerical problems.
Definition of angular momentum and its relation to angular velocity, Definition of Torque and its relation to angular velocity, Relation between angular momentum and Torque, Law of conservation of angular momentum, Work done by a Torque, Central force, Kepler's second law of Planetary motion (derivation), Numerical problems.

Pedagogy	Chalk and talk, Power point presentation, Videos **Self study Component**: Kepler's second law of Planetary motion

Module-2

Moment of Inertia: **08 Hours**

Moment of inertia and its physical significance. Rotational motion, Kinetic Energy of a rotating body, radius of gyration, Perpendicular and Parallel axis theorems (derivations), M.I of rectangular lamina, Annular ring and circular disc, (derivations), Hollow and Solid Cylinders (mention of expressions), M. I. of Flywheel (derivation), Numerical problems.

Pedagogy	Chalk and talk, Power point presentation, Videos **Practical Topics:** 1. M.I of fly wheel **Self study Component**: M. I. of different shapes

Module-3

Simple Harmonic Motion: **08 Hours**

Basics of SHM, Differential equation of linear SHM, Total energy of a particle executing SHM (Derivation), Expressions for the period of oscillation of flat spiral spring (Derivation) Composition of two linear SHM of equal periods acting at right angles to each other, Lissajous figures.
Theory of Free vibration, damped vibration and forced vibration. Resonance, sharpness of resonance, Helmholtz resonator (qualitative), Numerical problems.

Pedagogy	Chalk and talk, Power point presentation, Videos **Practical Topics:** 1. Period of oscillations of a spring 2. Lissajous figures using CRO 3. Helmholtz resonator **Self study Component:** Helmholtz resonator

Module-4

Gravitation: **08 Hours**

Newton's Law of Gravitation, Determination of Gravitational constant by Cavendish's Method, Density and mass of the Earth, Gravitational potential, potential energy , Potential at a point outside and inside a spherical shell.
Theory of Compound Pendulum, Interchangeability of Centres of suspension and oscillation, Four points collinear with the C.G. about which the time period is same, conditions for Maximum and Minimum time periods, Bar Pendulum, Experimental determination of "g" using Bar Pendulum, Numerical problems.

Pedagogy	Chalk and talk, Power point presentation, Videos **Practical Topics:** 1. Bar pendulum 2. Compound Pendulum **Self study Component**: Escape velocity and rocket propulsion

Module-5

Elasticity: **08 Hours**

Basics of elasticity, different elastic moduli, Poisson's ratio, Expression for Young's modulus (Y) , Bulk modulus (K) and Rigidity modulus (n) in terms of $\alpha$and β. Relation between Y, n and K, Limits of Poisson's ratio.
Bending of beams**-** Neutral surface and neutral plane, Derivation of expression for bending moment. Bending moment of a beam with circular and rectangular cross section. Single cantilever, derivation of expression for young's' modulus Torsion of cylinder**-** Expression for couple per unit twist of a solid cylinder (Derivation), Torsional pendulum-Expression for period of oscillation(qualitative), Numerical problems.

Pedagogy	Chalk and talk, Power point presentation, Videos **Practical Topics:** 1. Young's Modulus 2. Rigidity of modulus **Self-study Component:** Basics of elasticity

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

1. Explain conservation laws of linear and angular momentum and its applications
2. Able to compute M.I of various physical dimensions.
3. Examine the phenomena of Simple hormonic motion and distinction between free, damped and forced vibrations and the concept of resonance and quality factor with reference to damped hormonic oscillator.
4. Apply the Newton's law of gravitation to describe the phenomena of revolution of heavenly bodies.
5. Explore the concept of elasticity to design safe and stable man made structures.

Assessment Details (both CIE and SEE)

(methods of CIE need to be define topic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (3 Hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, report writing etc.
2. The class teacher has to decide the topic for closed book test, open book test, Written Quiz and Seminar. In the beginning only teacher has to announce the methods of CIE for the subject.

Semester End Examination:

Theory SEE will be conducted by University as per scheduled time table, with common question papers for subject

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub questions), should have a mix of topics under that module.
3. The students have to answer 5 full questions, selecting one full question from each module

Suggested Learning Resources:

Books

1. Mechanics (XX-Edition) – D.S.Mathur- S. Chand & Company Ltd., New-Delhi, 2007.
2. Mechanics (VI-Edition) - J.C. Upadhyay –Ramprasad &Sons,Agra, 2005.
3. Mechanics & Electrodynamics (XVII-Edition, Course- 1 & 2) – Brijlal, Subramanyam &JivanSeshan, S. Chand & Company Ltd., New-Delhi, 2008.
4. Properties of Matter (XIII-Edition) – Brijlal & Subramanyam, Eurasia Publishing House Pvt. Ltd., New-Delhi, 2001.
5. Elements of Properties of Matter (XXVIII-Edition), D.S.Mathur - S. Chand & Company Ltd., New-Delhi, 2005.
6. Physics, Vol. No.I (V-Edition) – Resnick, Halliday & Krane – John Wiley & Sons Inc., New-York, Singapore, 2005.
7. Berkely Physics, Vol. No.I – ABC Publications, Bangalore & New-Delhi.
8. University Physics (XI-Edition)- Young & Freedman – Pearson Education,2004.

Web links and Video Lectures (e-Resources):

- https://www.motionmountain.net/online.html
- http://www.csun.edu/science/physics/index.html
- https://nptel.ac.in/courses/122/106/122106027/
- https://www.youtube.com/watch?v=pyX8kQ-JzHI&list=PL6i60qoDQhQGaGbbg-4aSwXJvxOqO6o5e
- http://www2.phy.ilstu.edu/ptefiles/311content/resources/resources.html

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

https://www.vlab.co.in/broad-area-physical-sciences

- https://vlab.amrita.edu/index.php?sub=1&brch=74
- https://vlab.amrita.edu/index.php?sub=1&brch=280
- https://www.elmer.unibas.ch/pendulum/index.html

SAMPLE TEMPLATE

I Semester

CHEMISTRY.1			
Course Code	21CHE13	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

CLO 1	Impart the basic knowledge of Inorganic chemistry to solve the conceptual questions using the knowledge gained by studying the model of the atom, electronic configuration, shapes of s, p, and d orbitals, and periodic properties like atomic radii, ionic radii, ionization energy and electron affinity of elements.
CLO 2	Explain the different nature and behavior of organic compounds based on fundamental concepts learnt. And formulate the mechanism of organic reactions homolytic and heterolytic bond breaking by recalling and correlating the fundamental properties of the reagents involved.
CLO 3	Understand the concept of kinetics of chemical reaction and function of different indicators in titration.
CLO 4	Creatively redesign traditional experiments with a green focus (using the various principles of green chemistry)
CLO 5	Handle analytical data and estimation by volumetric analysis & gravimetry.

Pedagogy (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.
2. Show Video/animation films to convince abstract concepts.
4. Encourage collaborative (Group Learning) Learning in the class
5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking
6. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
7. Topics will be introduced in a multiple representation.
8. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
9. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1 Inorganic Chemistry 08 Hours

1. Atomic Structure:

Review of Bohr's theory and its limitations, dual behavior of matter and radiation, Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, quantum numbers, radial and angular wave functions and probability distribution curves, shapes of s, p, d orbitals. Aufbau and Pauli exclusion principles, Hund's multiplicity rule.

2. Periodic Properties and Periodicity:

Classification of elements into s, p, d, and f-blocks, cause of periodicity. Atomic and ionic radii, ionization energy, electron affinity and electronegativity – definition, methods of determination or evaluation, trends in periodic table (in s & p block elements).

Pedagogy	**Chalk and talk/power point presentation:** quantum numbers, radial and angular wave functions and probability distribution curves, shapes of s, p, d orbitals. Aufbau and Pauli exclusion principles, Hund's multiplicity rule. Atomic and ionic radii, ionization energy, electron affinity and electronegativity – definition, methods of determination or

	evaluation, trends in periodic table (in s & p block elements). **Videos/Learning material:** Classification of elements into s, p, d, and f-blocks **Self-study:** Bohr's theory and its limitations, dual behavior of matter and radiation, Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals.

Module-2 Organic Chemistry 08 Hours

1. Mechanism of Organic Reactions

Curved arrow notation, drawing electron movements with arrows, half-headed and double-headed arrows, homolytic and heterolytic bond breaking. Types of reagents–electrophiles and nucleophiles.

Reactive intermediates-carbocations, carbanions, free radicals, carbenes (formation, structure & stability).

2.Alkanes: Preparation by Corey-House reaction, conversion of alkanes to aromatic compounds via alkenes and alkynes- aromatization and pyrolysis**.**

Alkenes: Preparation of alkenes by Wittig's reaction, Hoffmann's elimination, Stereoselectivity. Mechanism of electrophilic addition, oxymercuration, reduction, hydroboration – oxidation and epoxidation. Mechanism of oxidation with $KMnO_4$ and OsO_4, ozonolysis. Industrial applications of ethene and propene.

Alkynes: Methods of preparation – Dehydrohalogenation, vicinal and gem dihalides, reactions of alkynes – Electrophilic additions with HCN, CH_3COOH and H_2O polymerization.

Pedagogy	**Chalk and talk/power point presentation**: Mechanism of Organic Reactions, Alkanes, alkenes and alkynes. **Videos/Learning material**: Mechanism of Organic Reactions **Self-study:** Types of reagents–electrophiles and nucleophiles. Reactive intermediates-carbocations, carbanions, free radicals, carbenes (formation, structure & stability).

Module-3 Physical Chemistry 08 Hours

1. Chemical Kinetics

Rate of reaction, rate equation, factors influencing the rate of a reaction – concentration, temperature, pressure, solvent, light, catalyst. Order of a reaction, integrated rate expression for zero order, first order, second and third order reaction. Half-life period of a reaction. Methods of determination of order of reaction, effect of temperature on the rate of reaction – Arrhenius equation. Theories of reaction rate – Simple collision theory for unimolecular and bimolecular collision. Transition state theory of Bimolecular reactions**.**

2. Indicators: Definition, types (acid-base, redox, adsorption indicators), examples for each type. Theory of indicators – Oswald's theory and Quinonoid theory – indicator constant – action of phenolphthalein and methyl orange in acid-base solutions – pH titration curves for strong acid vs strong base, weak acid vs strong base, weak base vs strong acid, choice of indicators in these types of titrations. Calculation of pH in mixture of acid and base.

Pedagogy	**Chalk and talk/power point presentation**: Chemical Kinetics, Indicators. **Videos/Learning material**: Methods of determination of order of reaction, effect of temperature on the rate of reaction – Arrhenius equation. **Self-study:** Definition, types (acid-base, redox, adsorption indicators), examples for each type.

Module-4 Green Chemistry 08 Hours

1. Green Chemistry: Introduction- Definition of green Chemistry, need of green chemistry, basic principles of green chemistry. Green synthesis- Evaluation of the type of the reaction i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic). Organic reactions by Sonication method: apparatus required examples of sone chemical reactions (Heck, Hunds-diecker and Wittig reactions).

2.Green catalysis: Heterogeneous catalysis, use of zeolites, silica, alumina, supported catalysis-biocatalysis: Enzymes, microbes Phase transfer catalysis (micellar/surfactant)

Pedagogy	**Chalk and talk/power point presentation**: Green Chemistry, Green Catalysis. **Videos/Learning material**: Green synthesis- Evaluation of the type of the reaction i) Rearrangements (100% atom economic), ii) Addition reaction (100% atom economic). Organic reactions by Sonication method. **Self-study:** bio catalysis: Enzymes, microbes Phase transfer catalysis (micellar/surfactant)

Module 5: Analytical Chemistry 08 Hours

1. Data handling: Accuracy and precision, types of error, statistical data treatment, significant figures and propagation of errors, use of spreadsheet and data treatment software, control chart, confidence limit, test of significance, outliers, calibration methods, linear and non-linear data fitting.

2. Gravimetric analysis: Properties of precipitates. Nucleation and crystal growth, factors influencing completion of precipitation. Co-precipitation and post- precipitation, purification and washing of precipitates. Precipitation from homogeneous solution, a few common gravimetric determinations.

3. Volumetric analysis: Acid base titration, complexometric titration, redox titration, precipitation titration.

Pedagogy	**Chalk and talk/power point presentation**: Data Handling, Gravimetric analysis. Volumetric analysis. **Videos/Learning material**: use of spreadsheet and data treatment software, control chart, confidence limit, test of significance, outliers, calibration methods, linear and non-linear data fitting. Co-precipitation and post- precipitation, purification and washing of precipitates. **Self-study:** Precipitation from homogeneous solution, a few common gravimetric determination.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO 1	Discuss the structure of an atom and periodicity in properties with reference to the *s* and *p* block of elements.
CO 2	Explain the fundamentals of organic chemistry and identify many organic reaction mechanisms
CO 3	Interpret the knowledge of kinetics to study rate law and rate of reaction, theories of reaction rates and study about different types of indicators.
CO 4	Enumerate the importance of Green chemistry and new insights of Green catalysis.
CO 5	Illustrate the fundamental principles of analytical chemistry and concepts of chemical analysis.

Assessment Details (both CIE and SEE)

(methods of CIE need to be define topic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (3 Hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, report writing etc.
2. The class teacher has to decide the topic for closed book test, open book test, Written Quiz and Seminar. In the beginning only teacher has to announce the methods of CIE for the subject.

Semester End Examination:

Theory SEE will be conducted by University as per scheduled time table, with common question papers for subject

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub questions), should have a mix of topics under that module.

Suggested Learning Resources:

Books

1. James E. Huheey, Ellen Keiter & Richard Keiter: Inorganic Chemistry: Principles of Structure and Reactivity, Pearson Publication.
2. G.L. Miessler & Donald A. Tarr: Inorganic Chemistry, Pearson Publication.
3. J.D. Lee: A New Concise Inorganic Chemistry, E.L.B.S.
4. F.A. Cotton & G. Wilkinson: Basic Inorganic Chemistry, John Wiley & Sons.
5. I.L. Finar: Organic Chemistry (Vol. I & II), E.L.B.S.
6. R.T. Morrison & R.N. Boyd: Organic Chemistry, Prentice Hall.
7. Peter Sykes: A Guide Book to Mechanism in Organic Chemistry, Orient Longman.
8. Peter Atkins, Peter William Atkins, Julio de Paul: Atkins' Physical Chemistry, OUP Oxford.
9. Pathania & Sharma. Physical Chemistry, Vishal Publications Jalandhar & Delhi.
10. Lancaster, M.(2016),Green Chemistry An Introductory Text.2nd Edition, RSC Publishing.
11. Anastas, P.T.; Warner, J.C .(1998), Green Chemistry, Theory and Practice, Oxford University Press
12. Skoog, D.A.; West, D.M. & Holler, F.J. Fundamentals of Analytical Chemistry 6th Ed., Saunders College Publishing, Fort Worth (1992).
13. Dean, J. A. Analytical Chemistry Notebook, McGraw Hill.

Web links and Video Lectures (e-Resources):

1. https://www.youtube.com/watch?v=CCsNJFsYSGs
2. https://www.youtube.com/watch?v=Efh5GkVbhEc
3. https://www.youtube.com/watch?v=NhdtqnEfa9w
4. https://www.youtube.com/watch?v=9opyTo7ZIJY

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- https://www.vlab.co.in/broad-area-chemical-sciences
- https://demonstrations.wolfram.com/topics.php
- https://interestingengineering.com/science

PROBLEM-SOLVING THROUGH PROGRAMMING			
Course Code	**21PSP14**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	2:2:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course Objectives:

1. Elucidate the basic architecture and functionalities of a Computer
2. Apply programming constructs of C language to solve the real-world problems
3. Explore user-defined data structures like arrays, structures and pointers in implementing solutions to problems
4. Design and Develop Solutions to problems using modular programming constructs such as functions and procedures

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) need not be only a traditional lecture method, but alternative effective teaching methods could be adopted to attain the outcomes.
2. Use of Video/Animation to explain the functioning of various concepts.
3. Encourage collaborative (Group Learning) Learning in the class.
4. Ask at least three HOT (Higher-order Thinking) questions in the class, which promotes critical thinking.
5. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyze information rather than simply recall it.
6. Introduce Topics in manifold representations.
7. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
8. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1	**0 8 Hours**
Introduction to Computer Hardware and Software: Computer generations, computer types, bits, bytes and words, CPU, Primary memory, Secondary memory, ports andconnections, input devices, output devices, Computers in a network, Network hardware, Software basics, software types. **Overview of C:** Basic structure of C program, executing a C program. Constant, variable and data types, Operators and expressions	
Teaching-Learning Process:	Chalk &board, Active Learning
Module-2	**08Hours**
Managing Input and output operations. Conditional Branching and Loops. Example programs, finding roots of a quadratic equation, computation of binomial coefficients, plotting of Pascal's triangle.	
Teaching-Learning Process:	Chalk & board, Active Learning, Problem based learning
Module-3	
Arrays: Arrays (1-D, 2-D), Character arrays and Strings, Basic Algorithms: Searching and Sorting **Algorithms** (Linear search, Binary search, Bubble sort and Selection sort).	
Teaching-Learning Process:	Chalk & board, MOOC, Active Learning

Module-4	
User Defined Functions and Recursion. Example programs: Finding Factorial of a positive integer, GCD of two numbers and Fibonacci sequence.	
Teaching-Learning Process:	Chalk& board, Problem based learning
Module-5	
Structures, Unions and Pointers, Pre-processor Directives and Example Programs like Addition of two complex numbers using structures , compute the sum, mean and standard deviation of all elements stored in an array of N real numbers using pointers.	
Teaching-Learning Process:	Chalk & board, MOOC

Course Outcomes (Course Skill Set)

At the end of the course the student will be able to:

1. Elucidate the basic architecture and functionalities of a computer and also recognize the hardware parts.
2. Apply programming constructs of C language to solve the real world problem
3. Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting
4. Explore user-defined data structures like structures, unions and pointers in implementing solutions
5. Design and Develop Solutions to problems using modular programming constructs using functions

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (3 hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation:

1.Methods recommended: Three tests (60%) Written Quiz (20%) and module assignments (20%)

2. The teacher has to decide the topics for open book tests ,seminars and for quiz, and announce in the class,

Semester End Examination: Theory SEE Will be conducted by the University as per the schedule time table;

1. The question paper will have 10 questions each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the 2 questions in a module will have a maximum of three sub divisions.
3. The students have to answer 5 full questions ,selecting one full question from each module.

Suggested Learning Resources:

Books

1. E. Balaguruswamy, Programming in ANSI C, 7th Edition, Tata McGraw-Hill
2. Brian W. Kernighan and Dennis M. Ritchie, The 'C' Programming Language, Prentice Hall of India.

Reference:

1. Reema Thereja , Programming in C , Cengage publication,

Web links and Video Lectures (e-Resources):

1. elearning.vtu.ac.in/e- content/courses/video/BS/15PCD23.html
2. https://nptel.ac.in/courses/106/105/106105171/

   MOOC courses can be adopted for more clarity in understanding the topics and verities of problem solving methods.

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

1. Real world problem solving using group discussion. E.g., Electricity bill generation. etc.,
2. Demonstration of solution to a problem through programming.
3. Demonstration of simple project and motivating the students to develop similar type of projects.

I-Semester

Mechanics lab			
Course Code	**21PHYL15**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	**1L+0T+2P+0S**	SEE Marks	50
Credits	02	Exam Hours	3 Hours

Course objectives:

- To realize experimentally the mechanical properties of materials
- To understand the laws of Oscillations

List of Experiments:

Any Eight experiments to be performed

Sl.NO	**Experiments**
1	Bar Pendulum L vs. T and L^2 Vs. LT^2 graphs.
2	M.I. of the Fly-Wheel
3	Verification of Parallel axes theorem of Moment of Inertia using Bar Pendulum.
4	Verification of Perpendicular axes theorem of Moment of Inertia using Torsional Pendulum.
5	Bifilar Suspension.
6	Young's Modulus of the material of a wire using Searls' Apparatus.
7	Y- by Uniform bending- Load depression Graph.
8	Y-Single Cantilever
9	Determination of rigidity modulus
10	Time period of a spring
	Demonstration Experiments (For CIE)
11	Lissajous Figures
12	Y by stretching
13	Poisons ratio of rubber tube

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

1. Able to calculate M.I of various physical dimensions.
2. Gain the knowledge of SHM
3. Recognize and to measure the Young's Modulus and Modulus of rigidity elastic properties of materials

Assessment Details (both CIE and SEE)

Continuous Internal Evaluation (CIE): The CIE marks awarded in case of Practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment and one practical test.

Semester End Evaluation (SEE): The practical examinations to be conducted as per the time table of university in a batch wise with strength of students not more than 10-15 per batch.

1. All laboratory experiments are to be included for practical examination.
2. Breakup of marks and the instructions printed on the cover page of answer script to be strictly adhered by the examiners.
3. Students can pick one experiment from the questions lot prepared by the examiners.
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.

Suggested Learning Resources:

https://vlab.amrita.edu/index.php?sub=1&brch=74&sim=571&cnt=1

https://vlab.amrita.edu/?sub=1&brch=280&sim=194&cnt=1

https://vlab.amrita.edu/index.php?sub=1&brch=280&sim=1518&cnt=1

https://vlab.amrita.edu/index.php?sub=1&brch=280&sim=210&cnt=2

https://vlab.amrita.edu/?sub=1&brch=280&sim=1509&cnt=1

https://vlab.amrita.edu/index.php?sub=1&brch=280&sim=550&cnt=1

https://www.merlot.org/merlot/viewMaterial.htm?id=74465

https://iwant2study.org/lookangejss/math/ejss_model_Lissajous/Lissajous_Simulation.xhtml

https://vlab.amrita.edu/index.php?sub=1&brch=280&sim=1518&cnt=1

II- Semester

Thermal Physics Lab			
Course Code	**21PHYL25**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	**1L+0T+2P+0S**	SEE Marks	50
Credits	02	Exam Hours	3 Hours

Course objectives:

- To gain the knowledge of heat and temperature
- To verify various laws of heat and thermodynamics.

List of Experiments:

Any Eight experiments to be performed

Sl.NO	Experiments
1	Lee's method of determination of thermal conductivity of rubber
2	Thermal conductivity of poor conductor (perspex)
3	Specific heat by cooling
4	Verification of Stefan's Law.
5	Determination of Stefan's constant
6	'J' by electrical method – radiation correction by graphical method
7	'J' by continuous flow method
8	Solar Cell characteristics a) Open Circuit voltage b) short Circuit Current.
9	Determination of solar constant.
10	Specific heat by Newton's law of cooling.
	Demonstration Experiments (For CIE)
11	Calibration of thermistor for temperature measurements
12	Problem based learning in Physics: Problems on entropy, heat engines and Wideman-Franz law

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

1. Have a clear understanding about laws of radiations,
2. Able to compute solar constant and thermal conductivity.
3. Able to calculate thermal conductivity of materials

Assessment Details (both CIE and SEE)

Continuous Internal Evaluation (CIE): The CIE marks awarded in case of Practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment and one practical test.

Semester End Evaluation (SEE): The practical examinations to be conducted as per the time table of University in a batch wise with strength of students not more than 10-15 per batch.

1. All laboratory experiments are to be included for practical examination.
2. Breakup of marks and the instructions printed on the cover page of answer script to be strictly adhered by

Chemistry Lab.1			
Course Code	**21CHEL16**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	1:0:2	SEE Marks	50
Credits	02	Exam Hours	03

Course objectives:

CLO1 Quantitative analysis of materials by Volumetric, Gravimetry and chemical method.

CLO2 Instrumental methods & Kinetics for developing experimental skills in building technical competence

Sl.NO	Experiments
1	Preparation of standard oxalic acid solution and standardization of potassium permanganate solution. Estimation of ferrous ammonium sulphate present in the solution.
2	Preparation of zinc sulphate solution and standardization of EDTA. Estimation of total hardness of water.
3	Determination of percentage of copper in brass by Iodometric method
4	Preparation of std. potassium dichromate solution and estimation percentage of ferrous ammonium sulphate present in the solution using potassium ferricyanide as an external indicator.
5	Determination of Chemical oxygen demand of industrial waste water.
6	Gravimetric estimation of barium as barium sulphate.
	Section B: Physical Chemistry Experiments
7	Study of kinetics of reaction between $K_2S_2O_8$ and KI, 2nd order, determination of rate constant
8	Conductometric titration of strong acid x strong base and weak acid x strong base.
9	Colourimeteric estimation of Cu^{2+} ion using NH_4OH as complexing agent.
10	Potentiometric titration of ferrous ammonium sulphate against potassium dichromate.
11	Determination of the density using specific gravity bottle and viscosity of a liquid using Ostwald's viscometer.
12	Determination of the density using specific gravity bottle and surface tension of a liquid using stalagmometer.

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

CO1 Determine the total hardness, ferrous ammonium sulphate and chemical oxygen demand in the given solution by volumetric analysis method.

CO2 Determine the percentage of copper and Iron in the given analyte solution by titration method.

CO3 Estimate the percentage of barium by gravimetric analysis.

CO4 Estimate the amount of substance present in the given solution using colourimeter,

potentiometer and conductivity meter.

CO5 Determine the Surface tension and coefficient of viscosity of the given organic liquid.

CO6 Demonstrate of kinetic study and determination of rate constant.

Assessment Details (both CIE and SEE)

Continuous Internal Evaluation (CIE): The CIE marks awarded in case of Practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment.

Semester End Evaluation (SEE): The practical examinations to be conducted as per the time table of university in a batch wise with strength of students not more than 10-15 per batch.

1. All laboratory experiments are to be included for practical examination.
2. Breakup of marks and the instructions printed on the cover page of answer script to be strictly adhered by the examiners.
3. Students can pick one experiment from the questions lot prepared by the examiners.
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.

Suggested Learning Resources:

Text Books:

1 Vogel's A.I. A text book of quantitative analysis, 35th edition, 2012.

2 Willard, Merit, Dean and Settle, A text book of Instrumental analysis, 6th edition 2012.

Reference books:

1. G.H Jeffery, J Bassett, J Mendham and R.C. Denney Vogel's A.I. A text book of quantitative analysis, Dorling Kindersley (India) Pvt., Ltd. 35th edition, 2012

2. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.;* W.H. Freeman & Co.: New York (2003).

Gurudeep Raj. *Advanced Practical Inorganic*

COMPUTER PROGRAMMING LABORATORY			
Course Code	**21CPL17**	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	0:0:2:0	SEE Marks	50
Total Hours of Pedagogy	--	Total Marks	100
Credits	02	Exam Hours	03

Course Objectives:

1. Explain problem statements and identify appropriate solutions
2. Demonstrate the use of IDE, C Compiler, and identify and rectify the syntax and syntactic errors during programming.
3. Development of algorithms and programs using constructs of C programming language
4. Reporting the observations

Sl. No.	Practice Programs
1	Calculation of Simple Interest,
2	Check whether the given number is even or odd
3	Convert string case
4	Check for the palindrome, prime number, perfect square.
5	Development of linear search algorithm Etc….
PART A-List of problems for which students should develop the program and execute in the Laboratory	
1	Simulation of a Simple Calculator.
2	Compute the roots of a quadratic equation by accepting the coefficients. Print appropriate messages.
3	An electricity board charges the following rates for the use of electricity: for the first 200 units 80 paise per unit: for the next 100 units 90 paise per unit: beyond 300 units Rs 1 per unit. All users are charged a minimum of Rs. 100 as meter charge. If the total amount is more than Rs 400, then an additional surcharge of 15% of the total amount is charged. Write a program to read the name of the user, the number of units consumed, and print out the charges.
5	Implement Binary Search on Integers / Names.
6	Implement Matrix multiplication and validate the rules of multiplication.
7	Compute sin(x)/cos(x) using Taylor series approximation. Compare your result with the built-in library function. Print both the results with appropriate inferences.
8	Sort the given set of N numbers using Bubble sort.
9	Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.
10	Implement structures to read, write and compute average- marks and the students scoring above and below the average marks for a class of N students.
11	Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers.
12	Implement Recursive functions for Binary to Decimal Conversion.
PART B – Practical Based Learning	
	A problem statement for each batch is to be generated in consultation with the co-examiner and the student should develop an algorithm, program and execute the program for the given problem with appropriate outputs.

Course Outcome (Course Skill Set)

At the end of the course the student will be able to:

1. Define the problem statement and identify the need for computer programming
2. Make use of C compiler, IDE for programming, identify and correct the syntax and syntactic errors in programming
3. Develop algorithm, flowchart and write programs to solve the given problem
4. Demonstrate use of functions, recursive functions, arrays, strings, structures and pointers in problem solving.
5. Document the inference and observations made from the implementation.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and SEE to pass. Practical Semester End Exam (SEE) is conducted for 100 marks (3 hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation (CIE):

75% CIE marks awarded in case of practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment and 25% marks for one practice test for practical-based learning.

Semester End Evaluation (SEE):

1. The practical examinations are to be conducted as per the timetable of the University in batch-wise with the strength of students not more than 10-15 per batch.
2. All laboratory experiments (Part A) are to be included for practical examination.
3. **Students can pick one experiment from the questions lot of *PART A* with equal choice to all the students in a batch.**
   For *PART B* examiners should frame a question for each batch, the student should develop an algorithm, program, execute and demonstrate the results with appropriate output for the given problem.
4. **Weightage of marks for PART A is 80% and for PART B is 20%**
5. Change of experiment is allowed only once for part A and 15% Marks allotted to the procedure part to be made zero. However, PART B question is mandatory (change of question is not allowed).
6. Marks distribution: procedure (15%) + execution (70%) + viva voce (15%)
   PART A (12+56+12 = 80) AND FOR PART B (3+14+3 = 20)

Suggested Learning Resources:

1. Yashavanth Kanetkar, Let us C, Authentic Guide to C Programming Langauge, bpb publisher, 17th Edition, 2020.
2. Herbert Schildt, C: The complete reference, Mc Graw Hill, 4th Edition, 2017
3. Programming in C, Reema Theraja

Weblinks and Video Lectures (e-Resources):

1. http://elearning.vtu.ac.in/econtent/courses/video/BS/14CPL16.html
2. https://nptel.ac.in/courses/106/105/106105171/

PB.Sc - I Semester (ಬಿ.ಎಸ್ಸಿ- ಪ್ರಥಮ ಸೆಮಿಸ್ಟರ್)

ಬಳಕೆ ಕನ್ನಡ - baLake Kannada (Kannada for Usage)

ಕನ್ನಡ ಕಲಿಕೆಗಾಗಿ ನಿಗದಿಪಡಿಸಿದ ಪಠ್ಯಪುಸ್ತಕ

(Prescribed Textbook to Learn Kannada)

ವಿಷಯ ಸಂಕೇತ (Course Code)	**21KBK18**	**ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು**	**50**
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ (Teaching Hours/Week (L:T:P: S)	**L – 3, P-0, S-1 = 03 ಗಂಟೆಗಳು / ವಾರಕ್ಕೆ**	**ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು**	**50**
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Hours of Pedagogy	**40 ಗಂಟೆಗಳು**	**ಒಟ್ಟು ಅಂಕಗಳು**	**100**
ಕ್ರೆಡಿಟ್ಸ್ (Credits)	**03**	**ಪರೀಕ್ಷೆಯ ಅವಧಿ**	**03**

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು (Course Learning Objectives):

- To Create the awareness regarding the necessity of learning of local language for comfortable and healthy life with native language people.
- To enable learners to Listen and understand the Kannada language properly.
- To speak, read and write Kannada language as per requirement.
- To train the learners for correct and polite conservation.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ (Teaching-Learning Process - General Instructions) :

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. **ಬಳಕೆ ಕನ್ನಡ ಈ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ಪ್ರಸ್ತುತ ಚಟುವಟಿಕೆಗಳ ಆಧಾರದ ಈ ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನವನ್ನು ಅನುಸರಿಸುವುದು.**
2. **ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಪ್ರೇರೇಪಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.**
3. **ಪ್ರತಿ ವಿದ್ಯಾರ್ಥಿ ಪುಸ್ತಕವನ್ನು ತರಗತಿಯಲ್ಲಿ ಬಳಸುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು ಮತ್ತು ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ಪ್ರೇರೇಪಿಸುವುದು.**
4. **ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಭಾಷೆ ಕಲಿಕೆಯ ವಿಧಾನಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮಕ್ಕೆಗೊಳ್ಳುವುದು. ಇದರಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಹೆಚ್ಚು ಏಕಾಗ್ರತೆಯಿಂದ ಪಾಠ ಕೇಳಲು ಮತ್ತು ಅಧ್ಯಯನದಲ್ಲಿ ತೊಡಗಲು ಅನುಕೂಲವಾಗುತ್ತದೆ.**
5. **ಇತ್ತೀಚಿನ ತಂತ್ರಜ್ಞಾನದ ಅನುಕೂಲಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವುದು ಸೂಕ್ತ - ಅಂದರೆ ಭಾಷಾಕಲಿಕೆಯ ಪ್ರಯೋಗಾಲಯದಲ್ಲಿ ಈ ವಿಧಾನಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವುದರ ಮುಖಾಂತರ ಬಹುಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.**
6. **ಬಹುಬೇಗ ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಸರಳ ವಿಧಾನಗಳ ಮುಖಾಂತರ ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತಹ ನವೀನ ಮಾದರಿಯ ವಿಧಾನಗಳನ್ನು ಶಿಕ್ಷಕರು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುವ ರೀತಿಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬಹುದು.**

Module-1

1. Introduction, Necessity of learning a local language.
2. Methods to learn the Kannada language.
3. Easy learning of a Kannada Language: A few tips. Hints for correct and polite conservation
4. Listening and Speaking Activities
5. Key to Transcription.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	**ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.**

Module-2

1. ವೈಯಕ್ತಿಕ, ಸ್ವಾಮ್ಯಸೂಚಕ/ಸಂಬಂಧಿತ ಸಾರ್ವನಾಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು - **Personal Pronouns, Possessive Forms, Interrogative words**
2. ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮಪದಗಳು - **Possessive forms of nouns, dubitive question and Relative nouns**
3. ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು **Qualitative, Quantitative and Colour Adjectives, Numerals**
4. **PÁgÀPÀ gÀÆ¥ÀUÀ¼ÀÄ ªÀÄvÀÄÛ «¨sÀQÛ ¥ÀævÀåAiÀÄUÀ¼ÀÄ – ¸À¥ÀÛ«Ä «¨sÀQÛ ¥ÀævÀåAiÀÄ – (D, CzÀÄ, CªÀÅ, C°è) Predictive Forms, Locative Case**
5. **ZÀvÀÄyð «¨sÀQÛ ¥ÀævÀåAiÀÄzÀ §¼ÀPÉ ªÀÄvÀÄÛ ¸ÀASÁåªÁZÀPÀUÀ¼ÀÄ - Dative Cases, and Numerals**

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-3

1. **¸ÀASÁåUÀÄtªÁZÀPÀUÀ¼ÀÄ ªÀÄvÀÄÛ §ºÀÄªÀZÀ£À £ÁªÀÄgÀÆ¥ÀUÀ¼ÀÄ - Ordinal numerals and Plural markers**
2. **£ÀÆå£À / ¤µÉÃzsÁxÀðPÀ QæAiÀiÁ¥ÀzÀUÀ¼ÀÄ ªÀÄvÀÄÛ ªÀtð UÀÄtªÁZÀPÀUÀ¼ÀÄ Defective / Negative Verbs and Colour Adjectives**
3. **ಅಪ್ಪಣೆ / ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತು ಒತ್ತಾಯ ಆರ್ಥರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು Permission, Commands, encouraging and Urging words (Imperative words and sentences)**
4. **ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು Accusative Cases and Potential Forms used in General Communication**
5. **"ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು -** Helping Verbs "iru and iralla", Corresponding Future and Negation Verbs

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-4

1. **ಹೋಲಿಕೆ (ತರತಮ) , ಸಂಬಂಧ ಸೂಚಕ ಮತ್ತು ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ-** Comparitive, Relationship, Identification and Negation Words
2. **ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು - Different types of forms of Tense, Time and Verbs**
3. **ದ್, -ತ್, - ತು, - ಇತು, - ಆಗಿ, - ಅಲ್ಲ, - ಗ್, -ಕ್, ಇದೆ, ಕ್ರಿಯಾ ಪ್ರತ್ಯಯಗಳೊಂದಿಗೆ**

ಭೂತ, ಭವಿಷ್ಯತ್ ಮತ್ತು ವರ್ತಮಾನ ಕಾಲ ವಾಕ್ಯ ರಚನೆ - Formation of Past, Future and Present Tense Sentences with Verb Forms

4. **ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮತ್ತು ರಾಜ್ಯದ ಬಗ್ಗೆ ಕುರಿತಾದ ಇತರೆ ಮಾಹಿತಿಗಳು** Karnataka State and General Information about the State

Lesson – 15 ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ - Kannada Language and Literature

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-5

1. **ಭಾಷೆ ಕಲಿಯಲು ಏನನ್ನುಮಾಡಬೇಕು ಮತ್ತು ಮಾಡಬಾರದು** Do's and Don'ts in Learning a Language
2. **PART - II, Kannada Language Script Part – 1**
3. **PART – III, Kannada Vocabulary List : ಸಂಭಾಷಣೆಯಲ್ಲಿ ದಿನೋಪಯೋಗಿ ಕನ್ನಡ ಪದಗಳು - Kannada Words in Conversation**

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು: course Outcomes (Course Skill Set): At the end of the Course, The Students will be able

1. To understand the necessity of learning of local language for comfortable life.
2. To Listen and understand the Kannada language properly.
3. To speak, read and write Kannada language as per requirement.
4. To communicate (converse) in Kannada language in their daily life with kannada speakers.
5. To speak in polite conservation.

Assessment Details (both CIE and SEE)

(methods of CIE need to be definetopic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)
The weight age of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (03 hours duration). Based on this grading will be awarded.

ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಪ್ರಕ್ರಿಯೆ ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ-Continuous Internal Evaluation (CIE) :

1. ಸೂಚಿಸಿದ ವಿಧಾನಗಳು : ಕಿರುಪರೀಕ್ಷೆ, ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳು, ವಿದ್ಯಾರ್ಥಿಗಳ ಭಾಷಾ ಸಂವಹನ ಕೌಶಲ್ಯವನ್ನು ಪ್ರಸ್ತುತಪಡಿಸಲು ಅನುಕೂಲವಾಗುವಂತಹ ಪಠ್ಯಾಧಾರಿತ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವುದು.
2. ಅಸೈನ್ಮೆಂಟ್ ಗಳನ್ನು ನೀಡುವುದು, ಪ್ರಬಂಧ ಸ್ಪರ್ಧೆ/ಚರ್ಚಾ ಸ್ಪರ್ಧೆಗಳು ಮತ್ತು ರಸಪ್ರಶ್ನೆ ಮಾದರಿಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಆಯೋಜಿಸುವುದು. ಈ ರೀತಿಯಲ್ಲಿ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡಬಹುದಾಗಿರುತ್ತದೆ.
3. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದ ಪಠ್ಯ ಭಾಗ ಮೇಲಿನ ಮೌಲ್ಯಮಾಪನ ಪ್ರಕ್ರಿಯೆಯಲ್ಲಿ ಬರುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು.

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ - Semester End Exam (SEE):

1. ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯಲ್ಲಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ. ಪ್ರತಿಪ್ರಶ್ನೆ 20 ಅಂಕಗಳಿಗೆ ಇರುತ್ತದೆ.
2. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದಿಂದ 2 ಪೂರ್ಣ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
3. ಪ್ರತಿಯೊಂದು ಪೂರ್ಣ ಪ್ರಶ್ನೆಗೆ ಪೂರಕವಾಗಿ ಮತ್ತು ಸಂಬಂಧಿಸಿದಂತೆ ಉಪ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
4. ವಿದ್ಯಾರ್ಥಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳಲ್ಲಿ 05 ಕ್ಕೆ ಉತ್ತರಿಸಬೇಕು. ಉತ್ತರಿಸುವಾಗ ಪ್ರತಿ ವಿಭಾಗದಿಂದ ಒಂದು ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಯನ್ನು ಉತ್ತರಿಸಬೇಕು.

(Suggested Learning Resource):

ವಿಶ್ವವಿದ್ಯಾಲಯವು ನಿಗದಿಪಡಿಸಿರುವ ಪಠ್ಯಪುಸ್ತಕ

"ಬಳಕೆ ಕನ್ನಡ"

- ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ

ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ಪೂರಕ ಓದಿಗಾಗಿ :

1. ಕನ್ನಡ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರವು ಅನ್ಯಭಾಷಿಕರಿಗೆ, ವಿದೇಶಿಗರಿಗೆ ಮತ್ತು ಹೊರ ರಾಜ್ಯದ ವಿದ್ಯಾರ್ಥಿಗಳು ಮತ್ತು ಹೊರ ದೇಶ/ರಾಜ್ಯ ಗಳಿಂದ ಬಂದು ಕರ್ನಾಟಕದಲ್ಲಿ ಇನ್ನಿತರ ಉದ್ಯೋಗಗಳಲ್ಲಿ ಇರುವವರು ಕನ್ನಡ ಭಾಷೆಯನ್ನು ಕಡಿಮೆ ಸಮಯದಲ್ಲಿ ಕಲಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಸಿದ್ಧಪಡಿಸಿರುವ ಕೈಪಿಡಿಗಳನ್ನು ಕನ್ನಡ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರದ ಜಾಲತಾಣ ಮತ್ತು ಸರ್ಕಾರದ ಅಧಿಕೃತ ಜಾಲತಾಣಗಳಲ್ಲಿರುವ ಕೈಪಿಡಿಗಳನ್ನು ಗಮನಿಸುವುದು.
2. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್ತು, ಕನ್ನಡ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಮತ್ತು ಕನ್ನಡ ಹಾಗೂ ಸಂಸ್ಕೃತಿ ಇಲಾಖೆಯ ಈಗಾಗಲೇ ಪ್ರಕಟಿಸಿರುವ ಕನ್ನಡ ನಾಡು ನುಡಿ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ವಿಷಯಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಪ್ರಕಟಣೆಗಳನ್ನು ಗಮನಿಸುವುದು.

B.Sc - I Semester (ಬಿ.ಎಸ್ಸಿ- ಪ್ರಥಮ ಸೆಮಿಸ್ಟರ್)

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ			
ವಿಷಯ ಸಂಕೇತ (Course Code)	**21KSK18**	ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು (CIE)	**50**
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ (Teaching Hours/Week (L:T:P: S)	**L – 3, P-0, S-1 = 03 ಗಂಟೆಗಳು / ವಾರಕ್ಕೆ**	ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು (SEE)	**50**
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Hours of Pedagogy	**40 ಗಂಟೆಗಳು**	ಒಟ್ಟು ಅಂಕಗಳು	**100**
ಕ್ರೆಡಿಟ್ಸ್ (Credits)	**03**	ಪರೀಕ್ಷೆಯ ಅವಧಿ	**03**

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು (Course Objectives):

- ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡದ ಜೊತೆಗೆ ಕ್ರಿಯಾತ್ಮಕ ಕನ್ನಡವನ್ನು, ಕನ್ನಡ ಸಾಹಿತ್ಯ, ಸಂಸ್ಕೃತಿ ಮತ್ತು ನಾಡು ನುಡಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- ತಾಂತ್ರಿಕ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ಪ್ರಮುಖ ಕಾಲಘಟ್ಟಗಳ ಸಾಹಿತ್ಯದ ಪರಿಚಯವನ್ನು ಮಾಡಿಕೊಡುವುದು.
- ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಪರಿಚಯ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನಗಳನ್ನು ನಾಡು-ನುಡಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪರಿಚಯಿಸುವುದು.
- ಕನ್ನಡದಲ್ಲಿ ತಾಂತ್ರಿಕ ವಿಜ್ಞಾನಗಳ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಹಲವಾರು ವಿಷಯಗಳನ್ನು ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- ಕನ್ನಡ ಭಾಷಾಭ್ಯಾಸ, ಸಾಮಾನ್ಯ ಕನ್ನಡ ಹಾಗೂ ಆಡಳಿತ ಕನ್ನಡದ ಪದಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ (Teaching-Learning Process - General Instructions) :

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಈ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ಬೋಧಿಸಲು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಪ್ರಸ್ತುತ ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನವನ್ನು ಅನುಸರಿಸುವುದು. ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಪ್ರೇರೇಪಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.
2. ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿ, ನಾಡು-ನುಡಿಯ ಅಂಶಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮಕೈಗೊಳ್ಳುವುದು.
3. ಇತ್ತೀಚಿನ ತಂತ್ರಜ್ಞಾನದ ಅನುಕೂಲಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವುದು - ಅಂದರೆ ಕವಿ-ಕಾವ್ಯ ಪರಿಚಯದಲ್ಲಿ ಕವಿಗಳ ಚಿತ್ರಣ ಮತ್ತು ಲೇಖನಗಳು ಮತ್ತು ಕಥೆ ಕಾವ್ಯಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಧ್ವನಿ ಚಿತ್ರಗಳು, ಸಂಭಾಷಣೆಗಳು, ಈಗಾಗಲೇ ಇತರ ವಿಮರ್ಶಕರು ಬರೆದಿರುವ ವಿಮರ್ಶಾತ್ಮಕ ವಿಷಯಗಳನ್ನು ಟಿಪಿಟಿ, ಡಿಜಿಟಲ್ ಮಾಧ್ಯಮಗಳ ಮುಖಾಂತರ ವಿಶ್ಲೇಷಿಸುವುದು.
4. ನವೀನ ಮಾದರಿಯ ಸಾಹಿತ್ಯ ಬೋಧನೆಗೆ ಸಂಬಂಧಪಟ್ಟ ವಿಧಾನಗಳನ್ನು ಶಿಕ್ಷಕರು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುವ ರೀತಿಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬಹುದು.

ಘಟಕ - 1

ಕನ್ನಡ ನಾಡು, ನುಡಿ ಮತ್ತು ಸಂಸ್ಕೃತಿಗೆ ಸಂಬಂಧಿಸಿದ ಲೇಖನಗಳು :

1. ಕರ್ನಾಟಕ ಸಂಸ್ಕಂತಿ
   - ಹಂಪ ನಾಗರಾಜಯ್ಯ
2. ಕರ್ನಾಟಕದ ಏಕೀಕರಣ : ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ
   - ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ
3. ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ
   - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೊ. ವಿ. ಕೇಶವಮೂರ್ತಿ

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಘಟಕ - 2	
ಕಾವ್ಯ ಭಾಗ (ಆಧುನಿಕ ಪೂರ್ವ) 1. ವಚನಗಳು : ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಅಲ್ಲಮಪ್ರಭು, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ, ಜೇಡರ ದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ. 2. ಕೀರ್ತನೆಗಳು : ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ - ಪುರಂದರದಾಸ ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೆ - ಕನಕದಾಸ 3. ತತ್ವಪದಗಳು : ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು - ಶಿಶುನಾಳ ಷರೀಫ, ಶಿವಯೋಗಿ - ಬಾಲಲೀಲಾ ಮಹಾಂತ ಶಿವಯೋಗಿ 4. ಜನಪದ ಗೀತೆ : ಬೀಸುವ ಪದ, ಬಡವರಡಬೇಡ	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.
ಘಟಕ - 3	
ಕಾವ್ಯ ಭಾಗ (ಆಧುನಿಕ) 1. ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗ : ಡಿ.ವಿ.ಜಿ. 2. ಕುರುಡು ಕಾಂಚಾಣಾ : ದ.ರಾ. ಬೇಂದ್ರೆ 3. ಹೊಸಬಾಳಿನ ಗೀತೆ : ಕುವೆಂಪು 4. ಹೆಂಡತಿಯ ಕಾಗದ : ಕೆ.ಎಸ್. ನರಸಿಂಹಸ್ವಾಮಿ 5. ಮಬ್ಬಿನಿಂದ ಮಬ್ಬಿಗೆ : ಜಿ.ಎಸ್. ಶಿವರುದ್ರಪ್ಪ 6. ಆ ಮರ ಈ ಮರ : ಚಂದ್ರಶೇಖರ ಕಂಬಾರ 7. ಚೋಮನ ಮಕ್ಕಳ ಹಾಡು : ಸಿದ್ದಲಿಂಗಯ್ಯ	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.
ಘಟಕ - 4	
ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿ ಪರಿಚಯ, ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ 1. ಡಾ. ಸರ್ ಎಂ ವಿಶ್ವೇಶ್ವರಯ್ಯ – ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ : ಎ ಎನ್ ಮೂರ್ತಿರಾವ್ 2. ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ 3. ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ : ಹಿ.ಚಿ. ಬೋರಲಿಂಗಯ್ಯ	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.
ಘಟಕ - 5	
ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ 1. ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ : ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ 2. 'ಕ' ಮತ್ತು 'ಬ' ಬರಹ ತಂತ್ರಾಂಶಗಳು ಮತ್ತು ಕನ್ನಡದ ಟೈಪಿಂಗ್* 3. ಕನ್ನಡ - ಕಂಪ್ಯೂಟರ್ ಶಬ್ದಕೋಶ* 4. ತಾಂತ್ರಿಕ ಪದಕೋಶ : ತಾಂತ್ರಿಕ ಹಾಗೂ ಪಾರಿಭಾಷಿಕ ಕನ್ನಡ ಪದಗಳು* * (ಅಧ್ಯಾಯ 3, 19, 20 ಮತ್ತು 21 ಇವುಗಳು ವಿತಾವಿ ಯದಿಂದ ಪ್ರಕಟಿತ " ಆಡಳಿತ ಕನ್ನಡ " ಪುಸ್ತಕದಿಂದ ಆಯ್ದ ಲೇಖನಗಳು - ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೊ.. ವಿ. ಕೇಶವಮೂರ್ತಿ.	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು: course Outcomes (Course Skill Set) :

1. ವಿದ್ಯಾರ್ಥಿಗಳು ತರಗತಿಯಲ್ಲಿ ಚರ್ಚೆ ಮತ್ತು ಸಂಭಾಷಣೆ ಮುಖಾಂತರ ನಡೆದ ಬೋಧನೆಯ ಫಲಿತಾಂಶವಾಗಿ ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡದ ಜೊತೆಗೆ ಕ್ರಿಯಾತ್ಮಕ ಕನ್ನಡವನ್ನು, ಕನ್ನಡ ಸಾಹಿತ್ಯ, ಸಂಸ್ಕೃತಿ ಮತ್ತು ನಾಡು ನುಡಿಯ ಕುರಿತು ಆಳವಾದ ಜ್ಞಾನವನ್ನು ಗಳಿಸಿರುತ್ತಾರೆ.
2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಮುಖ ಕಾಲಘಟ್ಟ ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯನ್ನು ವಿದ್ಯಾರ್ಥಿಗಳು ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಅವರ ಸಾಹಿತ್ಯದ ನಿರೂಪಣೆಯಿಂದ ಅರ್ಥೈಸಿಕೊಳ್ಳುತ್ತಾರೆ.
3. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಪರಿಚಯ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನಗಳನ್ನು ನಾಡು-ನುಡಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪರಿಚಯವಾಗುತ್ತದೆ.
4. ಕನ್ನಡದಲ್ಲಿ ತಾಂತ್ರಿಕ ವಿಜ್ಞಾನಗಳ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಹಲವಾರು ವಿಷಯಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ.
5. ಕನ್ನಡ ಭಾಷಾಭ್ಯಾಸ, ಸಾಮಾನ್ಯ ಕನ್ನಡ ಹಾಗೂ ಆಡಳಿತ ಕನ್ನಡದ ಪದಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ ಇದರಿಂದ ಮುಂದಿನ ಉದ್ಯೋಗದ ಸಂದರ್ಭಗಳಲ್ಲಿ ಭಾಷೆಯ ಬಳಕೆ ಮತ್ತು ಸಂವಹನ ಎರಡರಲ್ಲಿಯೂ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುತ್ತದೆ.

ಮೌಲ್ಯಮಾಪನದ ಮಾಹಿತಿ (Assessment Details- both CIE and SEE)

(methods of CIE need to be definetopic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)
The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (03hours duration). Based on this grading will be awarded.

ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಪ್ರಕ್ರಿಯೆ ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ-Continuous Internal Evaluation (CIE) :

1. ಸೂಚಿಸಿದ ವಿಧಾನಗಳು : ಕಿರುಪರೀಕ್ಷೆ, ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳು, ವಿದ್ಯಾರ್ಥಿಗಳ ಭಾಷಾ ಸಂವಹನ ಕೌಶಲ್ಯವನ್ನು ಪ್ರಸ್ತುತಪಡಿಸಲು ಅನುಕೂಲವಾಗುವಂತಹ ಪಠ್ಯಾಧಾರಿತ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವುದು.
2. ಅಸೈನ್ಮೆಂಟ್ ಗಳನ್ನು ನೀಡುವುದು, ಪ್ರಬಂಧ ಸ್ಪರ್ಧೆ/ಚರ್ಚಾ ಸ್ಪರ್ಧೆಗಳು ಮತ್ತು ರಸಪ್ರಶ್ನೆ ಮಾದರಿಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಆಯೋಜಿಸುವುದು. ಈ ರೀತಿಯಲ್ಲಿ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡಬಹುದಾಗಿರುತ್ತದೆ.
3. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದ ಪಠ್ಯ ಭಾಗ ಮೇಲಿನ ಮೌಲ್ಯಮಾಪನ ಪ್ರಕ್ರಿಯೆಯಲ್ಲಿ ಬರುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು.

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ - Semester End Exam (SEE):

1. ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯಲ್ಲಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ. ಪ್ರತಿಪ್ರಶ್ನೆ 20 ಅಂಕಗಳಿಗೆ ಇರುತ್ತದೆ.
2. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದಿಂದ 2 ಪೂರ್ಣ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
3. ಪ್ರತಿಯೊಂದು ಪೂರ್ಣ ಪ್ರಶ್ನೆಗೆ ಪೂರಕವಾಗಿ ಮತ್ತು ಸಂಬಂಧಿಸಿದಂತೆ ಉಪ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
4. ವಿದ್ಯಾರ್ಥಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳಲ್ಲಿ 05 ಕ್ಕೆ ಉತ್ತರಿಸಬೇಕು. ಉತ್ತರಿಸುವಾಗ ಪ್ರತಿ ವಿಭಾಗದಿಂದ ಒಂದು ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಯನ್ನು ಉತ್ತರಿಸಬೇಕು.

(Suggested Learning Resource):

ವಿಶ್ವವಿದ್ಯಾಲಯವು ನಿಗದಿಪಡಿಸಿರುವ ಪಠ್ಯಪುಸ್ತಕ

"ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ"

ಡಾ. ಹಿ. ಚಿ. ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ

ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ಪೂರಕ ಓದಿಗಾಗಿ :

1. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್ತು, ಕನ್ನಡ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಮತ್ತು ಕನ್ನಡ ಹಾಗೂ ಸಂಸ್ಕೃತಿ ಇಲಾಖೆಯ ಈಗಾಗಲೇ ಪ್ರಕಟಿಸಿರುವ ಕನ್ನಡ ನಾಡು ನುಡಿ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ವಿಷಯಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಪ್ರಕಟಣೆಗಳನ್ನು ಗಮನಿಸುವುದು.
2. ಕರ್ನಾಟಕ ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ಪರಿಷತ್ತು ಪ್ರಕಟಗೊಳಿಸುತ್ತಿರುವ ವಿಜ್ಞಾನ ಸಾಹಿತ್ಯ ಮತ್ತು ತಂತ್ರಜ್ಞಾನದ ಬರಹಗಳನ್ನು ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡದ ಪಠ್ಯಗಳಿಗೆ ಪೂರಕವಾಗಿ ಓದುವುದು.

Communicative English - I

Course Code	**21ENG19**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	L:1 ,T:1,P:1 S:0	SEE Marks	50
Total Hours of Pedagogy	03 Hours/Week	Total Marks	100
Credits	02	Exam Hours	03 Hours

Course objectives:

The course (21EGH15) will enable the students ,

- To know about Fundamentals of Communicative English and Communication Skills in general
- To train to identify the nuances of phonetics, intonation and enhance pronunciation skills for better communication skills.
- To impart basic English grammar and essentials of important language skills
- To enhance with English vocabulary and language proficiency for better communication skills.
- To learn about Techniques of Information Transfer through presentation

Language Lab : To augment LSRW, grammar and Vocabulary skills (Listening, Speaking, Reading, Writing and Grammar, Vocabulary) through tests, activities, exercises etc., comprehensive web-based learning and assessment systems can be referred as per the AICTE / VTU guidelines.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

- ✓ Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools and software's to meet the present requirements of the Global employment market.
  (i) Direct instructional method (Low /Old Technology),
  (ii) Flipped classrooms (High/advanced Technological tools),
  (iii) Blended learning (combination of both),
  (iv) Enquiry and evaluation based learning,
  (v) Personalized learning,
  (vi) Problems based learning through discussion,
  (vii) Following the method of expeditionary learning Tools and techniques,
  (viii) Use of audio visual methods through language Labs in teaching of of LSRW skills.
- ✓ Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills in teaching of communicative skills in general.

Module-1

Introduction to Communicative English :

Introduction, Language as a Tool, Fundamentals of Communicative English, Process of Communication, Barriers to Effective Communicative English, Different styles and levels in Communicative English (Communication Channels). Interpersonal and Intrapersonal Communication Skills, How to improve and Develop Interpersonal and Intrapersonal Communication Skills.

Teaching - Learning Process	Chalk and talk method, PowerPoint presentation to teach Communication skills (LSRW Skills), Creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Module-2

Introduction to Phonetics :

Introduction, Phonetic Transcription, English Pronunciation, Pronunciation Guidelines Related to consonants and vowels, Sounds Mispronounced, Silent and Non silent Letters, Syllables and Structure, Word Accent and Stress Shift, – Rules for Word Accent, Intonation – purposes of intonation, Spelling Rules and Words often Misspelt – Exercises on it. Common Errors in Pronunciation.

Teaching-Learning Process	Chalk and talk method, PowerPoint presentation and Animation videos to teach phonetics in Practical method, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Module-3

Basic English Communicative Grammar and Vocabulary PART - I :

Grammar : Basic English Grammar and Parts of Speech - Nouns, Pronouns, Adjectives, Verbs, Adverbs, Conjunctions , Articles and Preposition. Preposition, kinds of Preposition and Prepositions often Confused. Articles: Use of Articles – Indefinite and Definite Articles, Pronunciation of '*The*', words ending '*age'*, some plural forms. Introduction to Vocabulary, All Types of Vocabulary –Exercises on it.

Teaching-Learning Process	Chalk and talk method, Power Point presentation to teach Grammar, Animation videos on communication and language skills, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Module-4

Basic English Communicative Grammar and Vocabulary PART - II:

Sentences and Types of Sentences, Tense and Types of tenses, Functions of tenses, The Sequence of Tenses (Rules in use of Tenses) and Exercises on it. Question Tags, Question Tags for Assertive Sentences (Statements) – Some Exceptions in Question Tags and Exercises, One Word Substitutes and Exercises. Strong and Weak forms of words, Words formation - Prefixes and Suffixes (Vocabulary), Contractions and Abbreviations. Word Pairs (Minimal Pairs) – Exercises.

Teaching-Learning Process	Chalk and talk method, PowerPoint presentation to teach Grammar and phonetics, Animation videos on communication and language skills, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Module-5

Communication Skills for Employment :

Information Transfer: Oral Presentation - Examples and Practice. Extempore / Public Speaking, Difference between Extempore / Public Speaking, Communication Guidelines for Practice. Mother Tongue Influence (MTI) – South Indian Speakers, Various Techniques for Neutralization of Mother Tongue Influence – Exercises. Reading and Listening Comprehensions – Exercises.

Teaching-Learning Process	Chalk and talk method, Power Point presentation to teach Grammar and phonetics, Animation videos on communication and language skills, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Course outcome (Course Skill Set)

At the end of the course (21EGH15) the student will be able to :

1. Understand and apply the Fundamentals of Communication Skills in their communication skills
2. Identify the nuances of phonetics, intonation and enhance pronunciation skills
3. To impart basic English grammar and essentials of language skills as per present requirement
4. Understand and use all types of English vocabulary and language proficiency
5. Adopt the Techniques of Information Transfer through presentation

Assessment Details (both CIE and SEE) :

(methods of CIE need to be defined topic wise i.e.- MCQ, Quizzes, written test, Reports writing, Seminar and activities). The weight age of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass.

Continuous Internal Evaluation (CIE) :

1. Continuous internal evaluation (CIE) needs to be conducted for 50 marks like BSc Science courses - without any changes as per the University scheme and regulation (Modifications are not allowed).
2. Methods suggested: Quizzes, written quizzes and tests, Reports writing, Seminar and activities).
3. The class teacher has to decide the topic for the closed book test, Written Quiz, and Seminar. In the beginning, only the teacher has to announce the methods of CIE for the subject.

Semester end examination (SEE) Question paper pattern (Written Exam):

1. The question paper will have 10 full questions carrying equal marks.
2. Each full question will be for 20 marks..
3. There will be two full questions from each module.
4. Each full question will have Sub questions (Subject to a maximum of sub four questions) covering both the models.
5. The students have to answer 5 full questions, selecting one full question from each module.

Suggested Learning Resources:

1) **Communication Skills** by Sanjay Kumar and Pushp Lata, Oxford University Press - 2019.
2) **English for Engineers** by N.P.Sudharshana and C.Savitha, Cambridge University Press – 2018.
3) **A Textbook of English Language Communication Skills,** Infinite Learning Solutions–(Revised Edition) 2021.
4) **A Course in Technical English – D Praveen Sam, KN Shoba,** Cambridge University Press – 2020.
5) **Technical Communication** by Gajendra Singh Chauhan and Et al, Cengage learning India Pvt Limited [Latest Revised Edition] - 2019.
6) **English Language Communication Skills – Lab Manual cum Workbook,** Cengage learning India Pvt Limited [Latest Revised Edition] – 2019.
7) **Practical English Usage** by Michael Swan, Oxford University Press – 2016.
8) **Technical Communication** – Principles and Practice, Third Edition by Meenakshi Raman and Sangeetha Sharma, Oxford University Press 2017.

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- ✓ Contents related activities (Activity-based discussions)
- ✓ For active participation of students instruct the students to prepare Flowcharts and Handouts
- ✓ Organizing Group wise discussions Connecting to placement activities
- ✓ Quizzes and Discussions
- ✓ Seminars and assignments

II Semester

Integral Calculus and Ordinary Differential Equations

Course Code	**21MAT21**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	3:2:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	03	Exam Hours	3 hours

Course Learning Objectives The course will enable the students to:

- Inter-relationship of line integral, double and triple integral formulations.
- Applications of multivariable calculus tools in physics, optimization, and understanding the architecture of curves and surfaces in a plane etc.
- Learn various techniques of getting exact solutions of solvable first-order differential equations and linear differential equations of higher order.
- Formulate mathematical models in the form of ordinary differential equations to suggest possible solutions in physical, chemical and biological disciplines.

Prerequisite: The students are well aware of the basic concept of Integration and the concept of a differential equation.

Teaching-Learning Process (General Instructions):

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. In addition to the traditional lecture method, different types of innovative teaching methods may be adopted so that the delivered lessons shall develop student's theoretical and applied mathematical skills.
2. State the need for Mathematics with Engineering Studies and Provide real-life examples.
3. Support and guide the students for self–study.
4. You will also be responsible for assigning homework, grading assignments and quizzes, and documenting students' progress.
5. Encourage the students for group learning to improve their creative and analytical skills.
6. Show short related video lectures in the following ways:
   - As an introduction to new topics (pre-lecture activity).
   - As a revision of topics (post-lecture activity).
   - As additional examples (post-lecture activity).
   - As an additional material of challenging topics (pre-and post-lecture activity).
   - As a model solution of some exercises (post-lecture activity).

Module-1: Integral Calculus 1

Reduction Formula

Reduction formulae for - $\int sin^n x\, dx$, $\int \cos^n x\, dx$, $\int \tan^n x\, dx$, $\int \sin^m x \cos^n x\, dx$ with definite limit, Problems.

Tracing of Curve: Cartesian and Polar Curves, Astroid, Cycloid and Cardioid.

Applications of Integral Calculus: Computation of length of an arc, plane area, surface area and volume of solids of revolution for standard curves in Cartesian and Polar forms Astroid, Cycloid and Cardioid.

Problems.

Self-study: $\int \cot^n x\, dx$, $\int cosec^n x\, dx$, $\int \sec^n x\, dx$. Problems on curves Lemniscate of Bernoulli, Folium of Descartes.

(RBT Levels: L1 & L2)

Teaching-Learning Process	Chalk and talk method/PowerPoint Presentation

Module-2: Integral Calculus 2

Multiple Integrals

Multiple integrals: Evaluation of double and triple integrals. Evaluation of double integrals by changing the order of integration, change of variables in double and triple integrals. Applications to find the area and volume.

Self-study: Center of gravity.

(RBT Levels: L1 & L2)

Teaching-Learning Process	Chalk and talk method/PowerPoint Presentation

Module-3: Beta and Gamma functions

Beta and Gamma functions: Definitions, Properties, Relation between beta and gamma functions, Recurrence relation, Duplication formula and problems.

Differentiation under integral sign by Leibnitz rule- problems.

Self-study: Integration as a limit of a sum.

(RBT Levels: Ll & L2)

Teaching-Learning Process	Chalk and talk method/PowerPoint Presentation

Module-4: Ordinary differential equations of the first order

Linear and Bernoulli's equation. Exact and reducible to exact differential equations. Applications of differential equations-Orthogonal Trajectories.

Nonlinear differential equations: Introduction to general and singular solutions, solvable for p, Clairaut's equations, Problems.

Self-study: Newton's law of cooling, L-R circuits

(RBT Levels: L1 &L2)

Teaching-Learning Process	Chalk and talk method/PowerPoint Presentation

Module-5:

Differential Equations of higher-order: - Second-order linear differential equations with constant coefficients. Inverse differential operator, Particular integral of e^{ax}, $sinax$, $cosax$. $p_n(x)$, $e^{ax}\phi(x)$, Method of variation of parameters.

Differential equation with a variable coefficient: Cauchy's and Legendre differential equations.

Self-study: Applications to the oscillation of a spring, free oscillation and L-C-R circuits.

(RBT Levels: L1, L2 & L3)

Teaching-Learning Process	Chalk and talk method/PowerPoint Presentation

Course outcome (Course Skill Set)

After successfully completing the course, the student will have a good understanding of the following topics and their applications:

- To understand the concept of integration to compute the physical applications in finding the area and volume of curves.
- Apply the knowledge of beta and gamma functions to evaluate the complicated integrals.
- To learn the solution techniques for solving first-order ordinary differential equations.
- To learn the solution techniques of solving the higher-order differential equations.
- Compute the eigenvalues and eigenvectors required for the matrix diagonalization process.

Assessment Details (both CIE and SEE)

(Methods of CIE need to define topic wise i.e.- MCQ, Quizzes, Open book test or Seminar)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (3 Hours duration) and then it is reduced to 50. Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, Assignment, Report writing etc.
2. The class teacher has to decide the topic for the closed book test, open-book test, Written Quiz and Seminar. In the beginning, only the teacher has to announce the methods of CIE for the subject.
3. 10 marks weightage has to be given for **Self-Study component** (Via assignment / seminar / test).

Semester End Examination:

Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub-questions), **should have a mix of topics** under that module.
3. The students have to answer 5 full questions, selecting one full question from each module

Books recommended:

1. Shanthi Narayan and P K Mittal, Integral Calculus, Reprint. New Delhi:
2. G.B. Thomas and R.L. Finney, Calculus, Pearson edition, 2007.
3. M.D Raisinghania, ordinary and Partial differential equations, S. Chand and Co. Pvt. Ltd., 2014.
4. S Narayanan & T K Manicavachogam Pillay, Calculus.: S. Viswanathan Pvt.Ltd., Vol. I & II, 1996.
5. Schaum's outline of theory and problems of Differential Equations-Frank Ayers, McGraw-Hill Publishing Co.

Web links and Video Lectures (e-Resources):

- http://.ac.in/courses.php?disciplineID=111
- http://www.class-central.com/subject/math(MOOCs)
- http://academicearth.org/
- VTU EDUSAT PROGRAMME-20

Activity-Based Learning (Suggested Activities in Class)/ Practical Based learning

- Quiz
- Group assignment and
- Seminars

II Semester

Thermal Physics			
Course Code	21PHY22	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	(2L+2T+0P+0S)	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course objectives:
After going through the course, the student will be able

- To understand the basic concepts of kinetic theory of gases, Laws of thermodynamics, entropy and different radiation laws.
- Analyse the conversion of thermal energy in to mechanical energy on the basis of thermodynamic laws, fate of universe in entropic terms, how earth is protected from harmful radiations with reference to radiation laws.
- Apply the principles of thermodynamics in heat engines, exhaust pumps and liquefaction of gases.
- Calculation of the increase of entropy and evaluation of numerical problems.

Teaching Learning Process (General Instructions)
These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes. .

1. In addition to conventional lectures alternative effective teaching methods could be adopted to attain objectives.
2. Various concepts of teaching could be communicated through Power point/videos /animations.
3. Encourage for group discussion/quizzes/seminars in classes.
4. Improve the creativity in students by solving the same problem in different methods.
5. Ask some reasoning and higher order thinking questions in classes which improves critical thinking in students.
6. To improve the understanding level of every student, discuss how every concept can be applied to daily life.

Module-1

Kinetic Theory of Gases **08 Hours**

Postulates of kinetic theory of gases, Maxwell's law of distribution of velocities (qualitative) & its experimental verification. Average, RMS, & most probable velocity (derivation). Mean free path, mention of Clausius and Maxwell's expressions for mean free path, Brownian motion, Einstein's expression (derivation), determination of Avogadro's number; Transport Phenomena-Viscosity, diffusion, expression for η & κ (derivations), Critical Constants (Derivation), Numerical problems.

Teaching Learning Process	Chalk and talk, Power point presentation, Videos **Self-study Component:** Viscosity, Problem based learning in kinetic theory of gases

Module-2

Thermodynamics **08 Hours**

Thermodynamics: Zeroth Law, First Law and Internal energy, Isothermal & adiabatic changes- indicator diagram. Derivation of PV^{γ}=constant. Carnot's engine – Working- its efficiency (Derivation) & Carnot's theorem
Heat engines: Otto engine, Otto cycle, expression for efficiency, Diesel engine, Diesel cycle, expression for efficiency, Numerical problems.

Teaching Learning Process	Chalk and talk, Power point presentation, Videos **Self study Component:** Experimental analysis of diesel engine and petrol engine(Facility@Mechanical Engineering)

Module-3

Entropy **08 Hours**

Concept of entropy, change in entropy in reversible & irreversible processes, entropy-temperature diagram, second law of thermodynamics. Third law of Thermodynamics, Temperature Entropy diagram, Maxwell's relations-derivation of Maxwell's relations, applications to – i)Clausius - Clapeyron's equation ii) Clausius equations (specific heat of saturated vapours), Numerical problems.

Teaching Learning Process	Chalk and talk, Power point presentation, Videos **Practical Topics:** 1. Specific heat of material **Self study Component:** Concept of entropy

Module-4

Low Temperature Physics **08 Hours**

Measurement of low temperature, exhaust pump & its characteristics, exhaust pressure, degree of vacuum attainable, speed of pump:-principle, construction & working of Diffusion pump & Ionization gauge

Production of low temperature - Joule Thomson effect, Porous plug experiment with theory, Thermodynamical analysis of Joule Thomson effect, Liquefaction of Oxygen by cascade process, Liquefaction of Helium and its properties, Numerical problems.

Teaching Learning Process	Chalk and talk, Power point presentation, Videos **Self study Component:** Cryogenics and its applications

Module-5

Radiation & Thermal Conductivity **08 Hours**

Radiation pressure (qualitative), Stefan's law & its derivation using radiation pressure. Laboratory method for determination of Stefan's constant. Energy Distribution in the Black body spectrum, Wein's displacement law with derivation, Rayleigh-Jeans's law (qualitative), Planck's law of radiation & its derivation (from the concept of oscillators).Ferry's total radiation pyrometer. Solar radiation and determination of solar constant

Thermal Conductivity: Thermal conductivity, Thermal conductivity of good conductor by Searle's method, Thermal conductivity of bad conductor by Lee's and Charlton's method, Wideman-Franz law, Numerical problems.

Teaching Learning Process	Chalk and talk, Power point presentation, Videos **Practical Topics:** 1. Stefan's Law 2. Stefan's constant 3. Solar constant 4. Thermal conductivity **Self study Component:** Understand the thermal conductivity of different materials

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

1. Understand the basics of kinetic theory of gases, viscosity and diffusion in gases.
2. Comprehend the efficiency of Carnot's engine and the significance of first law and second of thermodynamics and implications of the second law of thermodynamics and limitations placed by the second law on the performance of thermodynamic systems.
3. Ability to evaluate entropy changes in a wide range of processes and determine the reversibility or irreversibility of a process from such calculations.
4. Realization and productions of low temperature, liquefy helium and hydrogen.
5. Have a clear understanding about laws of radiations, compute solar constant and thermal conductivity.

Assessment Details (both CIE and SEE)

(methods of CIE need to be define topic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (3 Hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, report writing etc.
2. The class teacher has to decide the topic for closed book test, open book test, Written Quiz and Seminar. In the beginning only teacher has to announce the methods of CIE for the subject.

Semester End Examination:

Theory SEE will be conducted by University as per scheduled time table, with common question papers for subject

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub questions), should have a mix of topics under that module.
3. The students have to answer 5 full questions, selecting one full question from each module

Suggested Learning Resources:

Books

1. Kinetic Theory of Gases (I-Edition) – V.N.Kelkar – Ideal Book Service, Pune, 1967.
2. Kinetic Theory of Gases (II-Edition) – R.S.Bhoosnurmath – IBH Prakashana, Bangalore, 1981.
3. Heat & Thermodynamics and Statistical Physics(XVIII-Edition) – Singhal, Agarwal &Satyaprakash – Pragati Prakashan, Meerut, 2006.
4. Heat & Thermodynamics and Statistical Physics(I-Edition) – Brijlal , Subramanyam &Hemne - S. Chand & Company Ltd., New-Delhi, 2008.
5. Heat and Thermodynamics (I-Edition) – D.S.Mathur - S. Chand & Company Ltd., New-Delhi, 1991.
6. A Treatise on Heat – Shaha and Srivatsava.
   A text book of heat - J.B.Rajam

Web links and Video Lectures (e-Resources):

- https://www.youtube.com/watch?v=txOnRP5hwCE&list=PLwdnzlV3ogoX-WIPb5DnmmmUOVAgI5wrq
- https://www.motionmountain.net/online.html
- https://nptel.ac.in/courses/122/106/122106027/
- https://www.explainthatstuff.com/engines.html
- http://www.csun.edu/science/physics/index.html
- http://www2.phy.ilstu.edu/ptefiles/311content/resources/resources.html

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- **https://www.vlab.co.in/broad-area-physical-sciences**
- **https://vlab.amrita.edu/index.php?sub=1&brch=195**
- **https://vlab.amrita.edu/index.php?sub=1&brch=194**

II Semester

CHEMISTRY.2			
Course Code	21CHE22	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	2:2:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

CLO 1	Explain the nature of chemical bonding in compounds. It provides basic knowledge about ionic, covalent and metallic bonding and explains molecular orbital theory and Group 1 elements.	Impart th using the shapes o ionizatio
CLO 2	Understand the basic concept of acidity & basicity, organic functional groups, which include oxygen containing functional groups and their reactivity patterns. The detailed reactions mechanistic pathways for each functional group will be discussed to unravel the spectrum of organic chemistry and the extent of organic transformations.	Explain t concepts heterolyt reagents
CLO 3	Interpret thermodynamic concepts, terminology, properties of thermodynamic systems, laws of thermodynamics and their correlation with other branches of physical chemistry and make them able to apply thermodynamic concepts to the system of variable compositions.	Understa indicator
CLO 4	Create awareness on Environmental pollution, knowledge on control of pollution and basic concepts of nano materials.	Creativel principle
CLO 5	Knowledge about industrial chemistry ,various manufacturing processes.	Handle a

Pedagogy (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.
2. Show Video/animation films to convince abstract concepts.
4. Encourage collaborative (Group Learning) Learning in the class
5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking
6. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.
7. Topics will be introduced in a multiple representation.
8. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
9. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1 Inorganic Chemistry

1. **Inorganic molecules and their chemical bonding:** Electronic theory of valency, chemical bond, bond energy, ionic bond and ionic character, Fajan's rule and lattice energy, ionic ratio, Born-Haber cycle, energetics of covalent bond in hydrogen molecule-valence bond theory. Hybridization and VSEPR theory and geometry of molecules. Molecular orbital theory for homo and heteronuclear diatomic molecules with examples B_2, C_2, N_2, O_2, F_2, CO, NO, CN^-. Inter- and intra-molecular forces, H-bonding, metallic bonding: band theory.
2. **Group 1 (Li, Na, K, Rb, Cs):** Origin of flame colour and spectra, reactivity with water, air, and dinitrogen, anomalous reactivity of Li, dissolution in liquid ammonia, solvated electrons, oxides, hydroxides, peroxides and superoxides, sulphides, oxo salts, halides and hydrides, carbides and intercalation compounds, complexes of crown ethers and cryptands, soap

formation, biological importance.

Teaching-Learning Process	**Chalk and talk/power point presentation:** Born-Haber cycle, energetics of covalent bond in hydrogen molecule-valence bond theory. Hybridization and VSEPR theory and geometry of molecules. Molecular orbital theory for homo and heteronuclear diatomic molecules with examples. Inter- and intra-molecular forces, H-bonding, metallic bonding: band theory, and Group 1. **Videos/Learning material:** Properties of elements in Group 1 **Self-study:** chemical bond, bond energy, ionic bond and ionic character, Fajan's rule and lattice energy, ionic ratio

Module-2 Organic Chemistry

1. **Acidity and basicity:** Acids and bases, conjugate base and acid, pKa and pKb; factors affecting acidity and basicity, amphoteric compounds.
2. **Alcohols, phenols, ethers and Amino Acids:** Synthesis of alcohols from aldehydes, ketones, carboxylic acids and esters, hydrogen bonding, acidity and reactivity, pinacol-pinacolone rearrangement, nucleophilic substitution on alcohols, Misunobu reaction. Preparation of phenols, acidity comparison between alcohols and phenols, reactivity of phenols, Fries and Claisen rearrangement, Gatterman synthesis, Hauben- Hoesch reaction, Lederer-Manasse reaction, oxidation of phenols. Synthesis of ethers, acid and base-catalyzed ring opening, ring opening with organometallic reagents (organolithium, Grignard and Gilman reagents), reductive ring opening, nucleophilic and solvolytic ring opening.
   Classification, of amino acids. Acid- base behaviour, isoelectric point and electrophoresis. Preparation of - amino acids.

Teaching-Learning Process	**Chalk and talk/power point presentation**: Acidity and basicity, Alcohols, phenols, ethers, and amino acids **Videos/Learning material**: Alcohols, phenols, ethers and Amino Acids **Self-study:** RNA and DNA

Module-3 Physical Chemistry

1. Basic Thermodynamics and Chemical Equilibria: Laws of thermodynamics- zeroth, first, second and third, heat capacity of solids, description of equilibrium, feasibility of chemical reaction, Gibbs-Helmholtz equation, phase transition- Clapeyron equation, Clapeyron-Clausius equation, free energy and entropy changes in reversible and irreversible processes.

2. Catalysis: Homogeneous and heterogeneous catalysis, kinetics of acid, base and enzyme catalysis with suitable examples, principle of adsorption, differences between physisorption and chemisorption, derivation of Langmuir adsorption isotherm, Langmuir-Hinshelwood and Rideal-Eley mechanisms.

Teaching-Learning Process	**Chalk and talk/power point presentation**: Basic Thermodynamics and Chemical Equilibria, Catalysis. **Videos/Learning material**: Catalysis

	Self-study: Adsorption mechanisms: Langmuir-Hinshelwood and Rideal- Eley mechanisms.
Module-4 Material Chemistry	
1. Environmental Chemistry: Air Pollutants: Sources, effects and control of Primary air pollutants- Carbon monoxide, Oxides of nitrogen, Hydrocarbons and sulphur, e-waste & Biomedical waste management (scientific land filling, composting and recycling. **2. Nanomaterials:** Introduction, synthesis-solution combustion and Sol-gel methods. Characterization techniques-PXRD and SEM. Applications. Nano materials-Synthesis & applications of Carbon based nanomaterials- fullerenes, Carbon nano tubes & Graphene	
Teaching-Learning Process	**Chalk and talk/power point presentation**: Environmental Chemistry and Nanomaterials. **Videos/Learning material**: Synthesis of nanomaterials **Self-study:** Classification of nanomaterials, applications of nanomaterials in medicines.
Module 5: Industrial Chemistry	
1. Glass: Raw materials, glassy state and its properties, classification (silicate and non-silicate glasses). Manufacture and processing of glass. Composition and properties of the following types of glasses: Soda lime glass, lead glass, armoured glass, safety glass, borosilicate glass, fluorosilicate, coloured glass, photosensitive glass. **Ceramics:** Important clays and feldspar, ceramic, their types and manufacture. High technology ceramics and their applications, superconducting and semiconducting oxides, fullerenes carbon nanotubes and carbon fibre. **Cement:** Classification of cement, ingredients and their role, Manufacture of cement and the setting process, quick setting cement 2. **Metallurgy:** Chief modes of occurrence of metals based on standard electrode potentials. Ellingham diagrams for reduction of metal oxides using carbon as reducing agent. Pyrometallurgy: Extraction of Nickel from sulphide ore – general metallurgy followed by Mond's process (purification) **Hydrometallurgy:** Extraction of gold from native ore by cyanide process and refining by quartation process. **Electrometallurgy:** Extraction of lithium by fusion method followed by electrolysis of lithium chloride. **Powder metallurgy:** Importance, and applications, production of tungsten powder. Principles of electroplating.	
Teaching-Learning Process	**Chalk and talk/power point presentation**: Glass, Ceramics, Cement, Metallurgy and Hydrometallurgy **Videos/Learning material**: Cement manufacturing process, Metallurgical processes **Self-study:** Electrometallurgy, powder metallurgical.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

CO 1	Discuss the chemical bonding and draw the plausible structures and geometries of molecules using Radius Ratio Rules, VSEPR theory and MO diagrams. And overview of Group 1 elements.	Discuss t
CO 2	Interpret the concept of synthetic chemistry learnt in this course to do functional group transformations.	Explain t synthesis
CO 3	Explain the three laws of thermodynamics and its applications and concept of catalysis.	Interpret reaction
CO 4	Enumerate the importance of. understanding the concepts of synthesis and characterization of nano-materials, understand the sources, consequences and its management of environmental pollution and solid waste management for the betterment of society	Enumera
CO 5	Illustrate the fundamental principles of industrial materials such as glass, ceramics and metallurgy.	Illustrate analysis.

Assessment Details (both CIE and SEE)

(methods of CIE need to be define topic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (3 Hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, report writing etc.
2. The class teacher has to decide the topic for closed book test, open book test, Written Quiz and Seminar. In the beginning only teacher has to announce the methods of CIE for the subject.

Semester End Examination:

Theory SEE will be conducted by University as per scheduled time table, with common question papers for subject

1. The question paper will have ten questions. Each question is set for 20 marks.
2. There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub questions), should have a mix of topics under that module.

Suggested Learning Resources:

Books

1. Lee, J.D.; (2010),**Concise Inorganic Chemistry**, Wiley India.
2. Huheey, J.E.; Keiter, E.A.; Keiter; R. L.; Medhi, O.K. (2009),**Inorganic Chemistry- Principles of Structure and Reactivity**, Pearson Education.
3. Douglas, B.E.; McDaniel, D.H.; Alexander, J.J.(1994),**Concepts and Models of Inorganic Chemistry**,John Wiley & Sons.
4. Atkins, P.W.; Overton, T.L.; Rourke, J.P.; Weller, M.T.; Armstrong, F.A. (2010),**Shriver and Atkins Inorganic Chemistry**, 5th Edition, Oxford University Press.
5. Morrison, R. N.; Boyd, R. N. **Organic Chemistry**, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. Finar, I. L. **Organic Chemistry** (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson

Education).

7. Ahluwalia, V.K.; Bhagat, P.; Aggarwal, R.; Chandra, R. (2005), **Intermediate for Organic Synthesis,**

8. Kapoor, K.L.(2013),**A Textbook of Physical Chemistry**,Vol 3, 3rd Edition, McGraw Hill Education.

9. McQuarrie, D. A.; Simon, J. D. (2004),**Molecular Thermodynamics**, Viva Books Pvt. Ltd.

10. Williams, Ian. *Environmental Chemistry, A Modular Approach*. Wiley. 2001. ISBN 0-471-48942-5

11 G.A. Ozin& A.C. Arsenault, "Nanotechnology "**A Chemical Approach to Nanomaterials**". RSC Publishing, 2005.

12. Poole Jr.; Charles P.; Owens, Frank J.(2003), **Introduction to Nanotechnology**, John Wiley and Sons.

13. Kent, J. A. (ed**)** (1997),**Riegel's Handbook of Industrial Chemistry**, CBS Publishers, New Delhi.

Web links and Video Lectures (e-Resources):

https://www.youtube.com/watch?v=CmiitvJiCPc

https://www.youtube.com/watch?v=tQn0SR_NAtY

https://www.youtube.com/watch?v=m_9bpZep1QM

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- https://www.vlab.co.in/broad-area-chemical-sciences
- https://demonstrations.wolfram.com/topics.php
- https://interestingengineering.com/science

Mathematics Lab

Subject Code	**21MATL24**	CIE Marks	**50**
Hours/Week (L: T: P)	**0:0:2**	SEE Marks	**50**
Total Hours	**28**	Exam Hours	**03**
Semester: 2			**No. of Credits: 01**

Mathematics practical with Free and Open Source Software (FOSS) tool for computer programs (3 hours/week per batch of not more than 15 students)

Sl.NO	Experiments
1	Introduction to Python: Basic syntax, variable types, basic operators, numbers, strings, lists, tuples, functions and input/output statements.
2	Some simple programs to understand the relational, conditional and logical operators. i) Compare two numbers (less than, greater than) using if statement ii) Sum of natural numbers using while loop iii) Finding the factors of a number using for loop. iv) To check the given number is prime or not (use if... else statement). v) Find the factorial of a number (use if...if...else). Simple programs to illustrate logical operators (and, or, not) Note: Give the structure of a while...do loop to the students and illustrate with an example.
3	Python commands to reduce given matrix to echelon form and normal form with examples.
4	Python program/command to establish the consistency or otherwise and solving system of linear equations.
5	Python command to find the nth derivatives.
6	Python program to find nth derivative with and without Leibnitz rule.
7	Obtaining partial derivative of some standard functions
8	Verification of Euler's theorem, its extension and Jacobean.
9	Python program for reduction formula with or without limits.
10	Python program to find equation and plot sphere, cone, cylinder.
11	Plotting of standard curves.
12	Surface area and Volume of curves.
13	Solution of differential equation and plotting the solution.

Assessment Details (both CIE and SEE)

Continuous Internal Evaluation (CIE): The CIE marks awarded in case of Practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment and one practical test.

Semester End Evaluation (SEE): The practical examinations to be conducted as per the time table of University in a batch wise with strength of students not more than 10-15 per batch.

1. All laboratory experiments are to be included for practical examination.
2. Breakup of marks and the instructions printed on the cover page of answer script to be strictly adhered by the examiners.
3. Students can pick one experiment from the questions lot prepared by the examiners.
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.

II- Semester

Thermal Physics Lab			
Course Code	**21PHYL25**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	**1L+0T+2P+0S**	SEE Marks	50
Credits	02	Exam Hours	3 Hours

Course objectives:

- To gain the knowledge of heat and temperature
- To verify various laws of heat and thermodynamics.

List of Experiments:

Any Eight experiments to be performed

Sl.NO	Experiments
1	Lee's method of determination of thermal conductivity of rubber
2	Thermal conductivity of poor conductor (Perspex)
3	Specific heat by cooling
4	Verification of Stefan's Law.
5	Determination of Stefan's constant
6	'J' by electrical method – radiation correction by graphical method
7	'J' by continuous flow method
8	Solar Cell characteristics a) Open Circuit voltage b) short Circuit Current.
9	Determination of solar constant.
10	Specific heat by Newton's law of cooling.
	Demonstration Experiments (For CIE)
11	Calibration of thermistor for temperature measurements
12	Problem based learning in Physics: Problems on entropy, heat engines and Wideman-Franz law

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

1. Have a clear understanding about laws of radiations,
2. Compute solar constant and thermal conductivity.
3. Calculate thermal conductivity of materials

Assessment Details (both CIE and SEE)

Continuous Internal Evaluation (CIE): The CIE marks awarded in case of Practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment and one practical test.

Semester End Evaluation (SEE): The practical examinations to be conducted as per the time table of university in a batch wise with strength of students not more than 10-15 per batch.

1. All laboratory experiments are to be included for practical examination.

2. Breakup of marks and the instructions printed on the cover page of answer script to be strictly adhered by the examiners.
3. Students can pick one experiment from the questions lot prepared by the examiners.
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.

Suggested Learning Resources:

https://vlab.amrita.edu/index.php?sub=1&brch=194&sim=353&cnt=1
http://vlabs.iitb.ac.in/vlabsdev/vlab_bootcamp/bootcamp/vlabs_recbanda/labs/exp1/index.html
https://vlab.amrita.edu/index.php?sub=1&brch=194&sim=548&cnt=1
https://vlab.amrita.edu/?sub=1&brch=195&sim=360&cnt=1
https://vlab.amrita.edu/index.php?sub=1&brch=194&sim=354&cnt=1
http://htv-au.vlabs.ac.in/heat-thermodynamics/Characteristics_of_Thermistor

II- Semester

CHEMISTRY LAB 2			
Course Code	**21CHEL26**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	1:0:2	SEE Marks	50
Credits	02	Exam Hours	100

Course objectives:

CLO1 Qualitative analysis of organic compounds.

CLO2 Qualitative analysis of Inorganic compounds.

Sl.NO	Experiments
	Section-A: Organic Chemistry Experiments
1	Systematic qualitative organic analysis of any five among following compounds 1. Acids 2. Alcohols 3. Aldehydes 4. Amides 5. Amines 6. Phenols 7. Hydrocarbons 8. Ketones 9. Nitro compounds 10. Ether
	Section B: Inorganic Chemistry Experiments
2	Semimicro qualitative analysis of mixture containing not more than four radicals (including interfering, Combinations and excluding insoluble one): Pb^{2+}, Hg^{2+}, Ag^{+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, As^{3+}, Sb^{3+}, Sn^{2+}, Fe^{3+}, Cr^{3+}, Al^{3+}, Co^{2+}, Ni^{2+}, Mn^{2+}, Zn^{2+}, Ba^{2+}, Sr^{2+}, Ca^{2+}, Mg^{2+}, NH_4^{+} CO_3^{2-}, S^{2-}, SO_3^{2-}, $S_2O_3^{2-}$, NO_2^{-}, CH_3COO^{-}, Cl^{-}, Br^{-}, I^{-}, NO_3^{-}, SO_4^{2-}, $C_2O_4^{2-}$, PO_4^{3-}, BO_3^{3-}

Course outcomes (Course Skill Set):

At the end of the course the student will be able to:

CO1 Determine the qualitative analysis of organic compounds.

CO2 Interpret the ions by qualitative analysis of inorganic compounds.

II- Semester

Assessment Details (both CIE and SEE)

Continuous Internal Evaluation (CIE): The CIE marks awarded in case of Practical shall be based on the weekly evaluation of laboratory journals/ reports after the conduction of every experiment .

Semester End Evaluation (SEE): The practical examinations to be conducted as per the time table of University in a batch wise with strength of students not more than 10-15 per batch.

1. All laboratory experiments are to be included for practical examination.
2. Breakup of marks and the instructions printed on the cover page of answer script to be strictly adhered by the examiners.
3. Students can pick one experiment from the questions lot prepared by the examiners.
4. Change of experiment is allowed only once and 15% Marks allotted to the procedure part to be made zero.

Suggested Learning Resources:

Text Books:

1 Vogel's Qualitative Inorganic Analysis, Svehla / Sivasankar 7th edition, Pearson Education India, 2012.

2 Vogel's Textbook of Practical Organic Chemistry, 5th Edition, Pearson Education India, 2003

B.Sc - II Semester (ಬಿ.ಎಸ್ಸಿ)

ಕರ್ನಾಟಕ ದರ್ಶನ – Karnataka Darshana

{For Non Kannadiga Students to Learn about Karnataka State and its Culture}

ವಿಷಯ ಸಂಕೇತ (Course Code)	**21KKD27**	**ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು**	**50**
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ (Teaching Hours/Week (L:T:P: S)	**L –3 , P-0, S-1 = 03 ಗಂಟೆಗಳು / ವಾರಕ್ಕೆ**	**ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು**	**50**
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Hours of Pedagogy	**40 ಗಂಟೆಗಳು**	**ಒಟ್ಟು ಅಂಕಗಳು**	**100**
ಕ್ರೆಡಿಟ್ಸ್ (Credits)	**03**	**ಪರೀಕ್ಷೆಯ ಅವಧಿ**	**03**

ಕರ್ನಾಟಕ ದರ್ಶನ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು (Course Learning Objectives):

- To create the awareness about Kannada Language and Karnataka State.
- To enable learners to know about Karnataka State general information at different periods.
- To enable the learners to know about Karnataka's Art and Culture in different perspectives.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ (Teaching-Learning Process - General Instructions) :

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. **ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಬೋಧಿಸಲು ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನವನ್ನು ಅನುಸರಿಸುವುದು.**
2. **ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಪ್ರೇರೇಪಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.**
3. **ಪ್ರತಿ ಪಾಠ ಮತ್ತು ಪ್ರವಚನಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಪೂರಕ ಚಟುವಟಿಕೆಗಳಿಗೆ ಪ್ರೇರೇಪಿಸುವುದು. ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣಗೊಂಡಿರುವ ವಿಷಯಗಳನ್ನು ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮಕ್ಕೆಗೊಳ್ಳುವುದು.**
4. **ಕರ್ನಾಟಕದ ಬಗ್ಗೆ ತಿಳಿಯಲು ಅನುಕೂಲವಾಗುವಂತೆ ಕಾರ್ಯಚಟುವಟಿಕೆಗಳನ್ನು ಮತ್ತು ಕ್ರಿಯಾ ಯೋಜನೆಗಳನ್ನು ರೂಪಿಸುವುದು.**
5. **ನವೀನ ಮಾದರಿಯ ವಿಧಾನಗಳನ್ನು ಶಿಕ್ಷಕರು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುವ ರೀತಿಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬಹುದು.**

Module-1

General Information about Karnataka State. About VTU – Visvesvaraya Technological University in Karnataka. Kannada and Karnataka – The Role of Karnataka in Nation Building. Geographical Information of Karnataka. The Brief Kannada Language History – Jnana Peeta Awardees of Karnataka and their Contribution. The Historical Background of Karnataka State. Special Information on the State of Karnataka.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-2

Karnataka is - "One State Many Worlds", Cultures of Karnataka, (Languages, Religions, Literature, Cinema and Theatre). Cultural Institutions of Karnataka. Architecture of Karnataka, - Important Palaces and forts in Karnataka, Sculptures in Karnataka - Difference between sculpture and architecture, Paintings of Karnataka - Different styles of paintings, traditional and modern paintings.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-3

Dance Forms in Karnataka - Classical and folk dances of Karnataka, Famous Karnataka dances and Dancers. Musical Instruments of Karnataka - classification of musical instruments of Karnataka, Carnatic music and Hindustani music, Song Forms of Karnataka - Song forms and singers of Karnataka state. Fairs and Festivals of Karnataka - Important festivals of Karnataka, Region-wise festivals and its importance, Clothing of Karnataka and its importance (region wise). Karnataka Handcrafts.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

Module-4	
Karnataka religion and philosophy, socio religious reforms movements in Karnataka. UNESCO's world heritage sites in Karnataka, how important is Karnataka culture and its historical background. Progress of multidimensional literature in Karnataka at different levels. The role of foreign writers and Travelers in Kannada Literature and history. Freedom movement in Karnataka, Karnataka's contribution in the development of nation at different levels.	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.
Module-5	
Awards and honours of Karnataka state. Social Institutions of Karnataka, Current developments in the field of Karnataka art, culture, paintings and in music. Famous personalities of Karnataka and their important contributions. Capital city of Karnataka "Bengaluru" - List of Important places of Karnataka, General road map and guidelines to Karnataka tourism. Industries and Important crops of Karntaka	
ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು: course Outcomes (Course Skill Set): At the end of the Course, The Students will be able :

1. To understand the Karnataka state all required general information.
2. To know the importance Karnataka's Art and Culture..
3. To easily move in the state for tourism and also will spread the state information to his friends and Families to know about Karnataka.

Assessment Details (both CIE and SEE)

(methods of CIE need to be define topic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)

The weight age of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (03 hours duration). Based on this grading will be awarded.

ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಪ್ರಕ್ರಿಯೆ ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ-Continuous Internal Evaluation -CIE:

1. ಸೂಚಿಸಿದ ವಿಧಾನಗಳು : ಕಿರುಪರೀಕ್ಷೆ, ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳು, ವಿದ್ಯಾರ್ಥಿಗಳ ಸಂವಹನ ಕೌಶಲ್ಯವನ್ನು ಪ್ರಸ್ತುತಪಡಿಸಲು ಅನುಕೂಲವಾಗುವಂತಹ ಪಠ್ಯಾಧಾರಿತ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವುದು.
2. ಅಸೈನ್ಮೆಂಟ್ ಗಳನ್ನು ನೀಡುವುದು, ಪ್ರಬಂಧ ಸ್ಪರ್ಧೆ/ಚರ್ಚಾ ಸ್ಪರ್ಧೆಗಳು ಮತ್ತು ರಸಪ್ರಶ್ನೆ ಮಾದರಿಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಆಯೋಜಿಸುವುದು. ಈ ರೀತಿಯಲ್ಲಿ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡಬಹುದಾಗಿರುತ್ತದೆ.
3. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದ ಪಠ್ಯ ಭಾಗ ಮೇಲಿನ ಮೌಲ್ಯಮಾಪನ ಪ್ರಕ್ರಿಯೆಯಲ್ಲಿ ಬರುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು.

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ - Semester End Exam (SEE):

1. ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯಲ್ಲಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ. ಪ್ರತಿಪ್ರಶ್ನೆ 20 ಅಂಕಗಳಿಗೆ ಇರುತ್ತದೆ.
2. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದಿಂದ 2 ಪೂರ್ಣ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
3. ಪ್ರತಿಯೊಂದು ಪೂರ್ಣ ಪ್ರಶ್ನೆಗೆ ಪೂರಕವಾಗಿ ಮತ್ತು ಸಂಬಂಧಿಸಿದಂತೆ ಉಪ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
4. ವಿದ್ಯಾರ್ಥಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳಲ್ಲಿ 05 ಕ್ಕೆ ಉತ್ತರಿಸಬೇಕು. ಉತ್ತರಿಸುವಾಗ ಪ್ರತಿ ವಿಭಾಗದಿಂದ ಒಂದು ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಯನ್ನು ಉತ್ತರಿಸಬೇಕು.

University Prescribed Text Book :

"ಕರ್ನಾಟಕ ದರ್ಶನ – Karnataka Darshana"

ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

Suggested Learning Resources for Reference :

1. **A Concise History of Karnataka** by Dr Sooryanaatha Kaamath - January 2017
2. **Karnataka Parampare - Vol I and II** - Published by Department of Kannada and Culture, GoK.
3. **A compendium of Indian art and culture** - S Baliyan Oxford University Press New Delhi- 2020
4. **Indian art and culture** - Nitin Singhania - McGraw Hill Education(India) Private Limited New Delhi – 2016
5. **Glimpses of Karnataka Folklore** - by Hebbale Nagesh, Publisher : Bharatiya Kala Prakashan.
6. **Off to Karnataka** (Discover India) by Sonia Mehta
7. **Geography of Karnataka** by Dr. Ranganath.- January 2016.

B.Sc - ಬಿ.ಎಸ್ಸಿ- ದ್ವಿತೀಯ ಸೆಮಿಸ್ಟರ್

ಸಾಹಿತ್ಯ ಸಿಂಚನ

ವಿಷಯ ಸಂಕೇತ (Course Code)	**21KSS27**	ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು (CIE)	**50**
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ (Teaching Hours/Week (L:T:P: S)	**L –3 , P-0, S-1 = 03 ಗಂಟೆಗಳು / ವಾರಕ್ಕೆ**	ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು (SEE)	**50**
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Hours of Pedagogy	**40 ಗಂಟೆಗಳು**	ಒಟ್ಟು ಅಂಕಗಳು	**100**
ಕ್ರೆಡಿಟ್ಸ್ (Credits)	**03**	ಪರೀಕ್ಷೆಯ ಅವಧಿ	**03**

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯದ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು (Course Objectives):

- ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಸಾಹಿತ್ಯ ಸಿಂಚನದ ಜೊತೆಗೆ ಕ್ರಿಯಾತ್ಮಕ ಕನ್ನಡವನ್ನು, ಕನ್ನಡ ಸಾಹಿತ್ಯ, ಸಂಸ್ಕೃತಿ ಮತ್ತು ನಾಡು ನುಡಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.
- ತಾಂತ್ರಿಕ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಹಳೆಗನ್ನಡ, ನಡುಗನ್ನಡ ಮತ್ತು ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆಯ ಪ್ರಮುಖ ಕಾಲಘಟ್ಟಗಳ ಸಾಹಿತ್ಯದ ಪರಿಚಯವನ್ನು ಮಾಡಿಕೊಡುವುದು.
- ನಾಡು-ನುಡಿಗೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ವಿವಿಧ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವ್ಯವಸ್ಥೆ (Teaching-Learning Process - General Instructions) :

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

1. ಸಾಹಿತ್ಯ ಸಿಂಚನ ಈ ಪಠ್ಯಪುಸ್ತಕವನ್ನು ಬೋಧಿಸಲು ತರಗತಿಯಲ್ಲಿ ಶಿಕ್ಷಕರು ಪ್ರಸ್ತುತ ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನವನ್ನು ಅನುಸರಿಸುವುದು. ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ತಯಾರಿಸಲು ವಿದ್ಯಾರ್ಥಿಗಳನ್ನು ಪ್ರೇರೇಪಿಸುವುದು ಮತ್ತು ತರಗತಿಯಲ್ಲಿ ಅವುಗಳನ್ನು ಚರ್ಚಿಸಲು ಅವಕಾಶ ಮಾಡಿಕೊಡುವುದು.
2. ಡಿಜಿಟಲ್ ತಂತ್ರಜ್ಞಾನದ ಮುಖಾಂತರ ಇತ್ತೀಚೆಗೆ ಡಿಜಿಟಲೀಕರಣ ಗೊಂಡಿರುವ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿ, ನಾಡು-ನುಡಿಯ ಅಂಶಗಳನ್ನು ತರಗತಿಯಲ್ಲಿ ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ಮುಖಾಂತರ ಚರ್ಚಿಸಲು ಕ್ರಮಕೈಗೊಳ್ಳುವುದು.
3. ಇತ್ತೀಚಿನ ತಂತ್ರಜ್ಞಾನದ ಅನುಕೂಲಗಳನ್ನು ಬಳಸಿಕೊಳ್ಳುವುದು ಸೂಕ್ತ - ಅಂದರೆ ಕವಿ-ಕಾವ್ಯ ಪರಿಚಯ ದಲ್ಲಿ ಕವಿಗಳ ಚಿತ್ರಣವನ್ನು ಮತ್ತು ಲೇಖನಗಳು ಮತ್ತು ಕಥೆ ಕಾವ್ಯಗಳ ಮೂಲ ಅಂಶಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಧ್ವನಿ ಚಿತ್ರಗಳು, ಸಂಭಾಷಣೆಗಳು, ಈಗಾಗಲೇ ಇತರ ವಿಮರ್ಶಕರು ಬರೆದಿರುವ ವಿಮರ್ಶಾತ್ಮಕ ವಿಷಯಗಳನ್ನು ಟಿಪಿಟಿ, ಡಿಜಿಟಲ್ ಮಾಧ್ಯಮಗಳ ಮುಖಾಂತರ ವಿಶ್ಲೇಷಿಸುವುದು.
4. ನವೀನ ಮಾದರಿಯ ಸಾಹಿತ್ಯ ಬೋಧನೆಗೆ ಸಂಬಂಧಪಟ್ಟ ವಿಧಾನಗಳನ್ನು ಶಿಕ್ಷಕರು ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುವ ರೀತಿಯಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಬಹುದು.

ಘಟಕ - 1

1. ಕರ್ನಾಟಕದ ಸಂಕ್ಷಿಪ್ತ ಇತಿಹಾಸ
2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಸಂಕ್ಷಿಪ್ತ ಚರಿತ್ರೆ
3. ಹಳೆಗನ್ನಡ ಸಾಹಿತ್ಯ - ಪಂಪ ಪೂರ್ವ ಯುಗ
4. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ರಚನೆಗೆ ಪ್ರಮುಖ ಪ್ರೇರಣೆಗಳು ಮತ್ತು ಪ್ರಭಾವಗಳು
5. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಂಪರೆ ಮತ್ತು ರಾಜಾಶ್ರಯ
6. ಕವಿರಾಜಮಾರ್ಗ ಮತ್ತು ವಡ್ಡಾರಾಧನೆ

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಘಟಕ - 2

1. ಪಂಪ / ಚಂಪೂ ಯುಗದ ಕನ್ನಡ ಸಾಹಿತ್ಯ ಮತ್ತು ಪರಂಪರೆ
2. ಆದಿಕವಿ ಪಂಪ, ರನ್ನ, ಪೊನ್ನ ಮತ್ತು ಜನ್ನ
3. ಒಂದನೇ ನಾಗವರ್ಮ, ನಾಗಚಂದ್ರ, 10 ಮತ್ತು 11ನೇ ಶತಮಾನದ ಸಮಕಾಲೀನ ಪ್ರಮುಖ ಕವಿಗಳು
2 ನಡುಗನ್ನಡ ಸಾಹಿತ್ಯ - ವಚನ ಸಾಹಿತ್ಯ / ಬಸವ ಯುಗ
3 ವಚನ ಸಾಹಿತ್ಯದ ಬೆಳವಣಿಗೆಗೆ ಕಾರಣಗಳು ಮತ್ತು ಅದರ ಮಹತ್ವ
4 ಪ್ರಮುಖ ವಚನಕಾರರು, ವಚನ ಸಾಹಿತ್ಯದಲ್ಲಿ ವೈಚಾರಿಕತೆ ಮತ್ತು ಕಾಯಕ ತತ್ತ್ವ
5 ಕುಮಾರವ್ಯಾಸ ಯುಗ ಮತ್ತು ಸಾಹಿತ್ಯದ ಇತರೆ ರೂಪಗಳು - ರಗಳೆ – ಹರಿಹರ, ಷಟ್ಪದಿ – ಕುಮಾರವ್ಯಾಸ, ಲಕ್ಷ್ಮೀಶ, ರಾಘವಾಂಕ, ಸಾಂಗತ್ಯ - ರತ್ನಾಕರವರ್ಣಿ,
6 ದಾಸ ಸಾಹಿತ್ಯ / ಕೀರ್ತನೆಗಳು - ಪುರಂದರದಾಸರು, ಕನಕದಾಸರು ಮತ್ತು ಇತರೆ ಕೀರ್ತನೆಕಾರಾರು
7 ತ್ರಿಪದಿ - ಸರ್ವಜ್ಞ, ಜಾನಪದ ಸಾಹಿತ್ಯ, ತತ್ತ್ವಪದಗಳು - ಶಿಶುನಾಳ ಶರೀಫರು
8 ಮಹಿಳಾ ಸಾಹಿತ್ಯ : ಹೆಳವನಕಟ್ಟೆ ಗಿರಿಯಮ್ಮ ಮತ್ತು ಸಂಚಿಹೊನ್ನಮ್ಮ
9 ಆಧುನಿಕ ಪೂರ್ವ ಕನ್ನಡ ಸಾಹಿತ್ಯ : ಕೆಂಪುನಾರಾಯಣ ಮತ್ತು ಮುದ್ದಣ

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಘಟಕ - 3

1. ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯ ಚರಿತ್ರೆ - ಪ್ರಭಾವಗಳು, ಪ್ರೇರಣೆಗಳು ಮತ್ತು ಬೆಳೆದು ಬಂದ ದಾರಿ
2. ಹೊಸಗನ್ನಡ ಸಾಹಿತ್ಯದ ಪಂಥ / ಪ್ರಕಾರಗಳು
3. ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯ - ಜ್ಞಾನಪೀಠ ಪ್ರಶಸ್ತಿ ಪುರಸ್ಕೃತ ಸಾಹಿತಿಗಳ ಪರಿಚಯ
4. ಆಧುನಿಕ ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಸಾಹಿತ್ಯ - (ಪ್ರಮುಖ ಪಂಥದ/ಪ್ರಕಾರಗಳ ಸಾಹಿತಿಗಳು – ಮಾಹಿತಿಗಾಗಿ)

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಘಟಕ - 4

1. ಕುವೆಂಪುರವರ “ನೀಂ ಮಹಚ್ಚಿಲ್ಪಿ ದಿಟಂ”
2. ದ ರಾ ಬೇಂದ್ರೆರವರ ನಾದಲೀಲೆ ಯಿಂದ “ನೀ ಹಿಂಗೆ ನೋಡಬ್ಯಾಡ ನನ್ನ” ಗೀತೆ
3. ಚಂದ್ರಶೇಖರ ಕಂಬಾರರವರ “**ಕಲೆಗಾರಣ್ಣ**”
4. ಡಿವಿಜಿಯವರ ಮಂಕುತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಆಯ್ದ ಪದ್ಯಭಾಗಗಳು
5. ಡಾ. ಸಿದ್ದಲಿಂಗಯ್ಯ ನವರ “ಕತ್ತೆ ಮತ್ತು ಧರ್ಮ ”
6. ಜಿ.ಎಸ್.ಶಿವರುದ್ರಪ್ಪ ರವರ “ಕಾಣದ ಕಡಲಿಗೆ ಹಂಬಲಿಸಿದೆ ಮನ”
7. ಸವಿತಾ ನಾಗಭೂಷಣ ರವರ “ಎಲ್ಲ ಹುಡುಗಿಯರ ಕನಸು”

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಘಟಕ - 5

1. ವೈಚಾರಿಕತೆಯ ಲೇಖನ - ನೇಮಿಚಂದ್ರರವರ “ಸೋಲೆಂಬುದು ಅಲ್ಪವಿರಾಮ” ಲೇಖನ
2. ಕನ್ನಡದ ಉಪಭಾಷೆಗಳು – ಡಾ. ಎಲ್ ತಿಮ್ಮೇಶ
3. ಷೇರುಪೇಟೆ, ಹಣಕಾಸು ನಿರ್ವಹಣೆ ಮತ್ತು ಮಾರುಕಟ್ಟೆ– ಟಿ. ಎಲ್. ರವೀಂದ್ರ
4. ಜಾಗತಿಕ ಸನ್ನಿವೇಶದಲ್ಲಿ ತಾಂತ್ರಿಕ ಸಂವಹನ ಕೌಶಲ್ಯಗಳ ಮಹತ್ವ - ಡಾ. ಎಲ್ ತಿಮ್ಮೇಶ ಮತ್ತು ಡಾ. ಅಪ್ಪಾಸಾಬ ಎಲ್. ವಿ
5. ತಾಂತ್ರಿಕ ಭಾಷೆ, ಸಂವಹನ & ಉದ್ಯೋಗ- ಡಾ. ಎಲ್ ತಿಮ್ಮೇಶ ಮತ್ತು ಡಾ. ಅಪ್ಪಾಸಾಬ ಎಲ್. ವಿ
6. ‘ಕ’ ಮತ್ತು ‘ಬ’ ಬರಹ ತಂತ್ರಾಂಶಗಳು ಮತ್ತು ಕನ್ನಡದ ಟೈಪಿಂಗ್ - ಡಾ. ಎಲ್ ತಿಮ್ಮೇಶ

ಬೋಧನೆ ಮತ್ತು ಕಲಿಕಾ ವಿಧಾನ	ಪುಸ್ತಕ ಆಧಾರಿತ ಬ್ಲಾಕ್ ಬೋರ್ಡ್ ವಿಧಾನ, ಪ್ರಮುಖ ಅಂಶಗಳ ಚಾರ್ಟ್ ಗಳನ್ನು ಬಳಸುವುದು, ಪಿಪಿಟಿ ಮತ್ತು ದೃಶ್ಯ ಮಾಧ್ಯಮದ ವಿಡಿಯೋಗಳನ್ನು ಬಳಸುವುದು, ವಿದ್ಯಾರ್ಥಿಗಳೊಂದಿಗೆ ಚಟುವಟಿಕೆಗಳ ಮುಖಾಂತರ ಚರ್ಚಿಸುವುದು.

ಸಾಹಿತ್ಯ ಸಿಂಚನ ಪಠ್ಯದ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು: **course Outcomes (Course Skill Set) :**

1. ಕನ್ನಡ ಸಾಹಿತ್ಯ, ಭಾಷೆ, ಸಂಸ್ಕೃತಿ ಮತ್ತು ನಾಡು ನುಡಿಯ ಕುರಿತು ಆಳವಾದ ಜ್ಞಾನವನ್ನು ಗಳಿಸುತ್ತಾರೆ.
2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಮುಖ ಕಾಲಘಟ್ಟಗಳ ಚರಿತ್ರೆಯನ್ನು ಪ್ರಮುಖ ಕವಿಗಳು ಮತ್ತು ಅವರ ಸಾಹಿತ್ಯದ ನಿರೂಪಣೆಯಿಂದ ಅರ್ಥೈಸಿಕೊಳ್ಳುತ್ತಾರೆ.
3. ಕನ್ನಡ ಸಾಹಿತ್ಯಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಹಲವಾರು ವಿಷಯಗಳ ಪರಿಚಯವಾಗುತ್ತದೆ.
4. ಕನ್ನಡ ಭಾಷೆಯ ಬಳಕೆ ಮತ್ತು ಸಂವಹನ ಎರಡರಲ್ಲಿಯೂ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಅನುಕೂಲವಾಗುತ್ತದೆ.

ಮೌಲ್ಯಮಾಪನದ ಮಾಹಿತಿ (Assessment Details- both CIE and SEE)

(methods of CIE need to be definetopic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)
The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (03hours duration). Based on this grading will be awarded.

ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಪ್ರಕ್ರಿಯೆ ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ-**Continuous Internal Evaluation (CIE) :**

1. ಸೂಚಿಸಿದ ವಿಧಾನಗಳು : ಕಿರುಪರೀಕ್ಷೆ, ಬಹು ಆಯ್ಕೆ ಮಾದರಿಯ ಪ್ರಶ್ನೆಗಳು, ವಿದ್ಯಾರ್ಥಿಗಳ ಭಾಷಾ ಸಂವಹನ ಕೌಶಲ್ಯವನ್ನು ಪ್ರಸ್ತುತಪಡಿಸಲು ಅನುಕೂಲವಾಗುವಂತಹ ಪಠ್ಯಾಧಾರಿತ ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವುದು.
2. ಅಸೈನ್ಮೆಂಟ್ ಗಳನ್ನು ನೀಡುವುದು, ಪ್ರಬಂಧ ಸ್ಪರ್ಧೆ/ಚರ್ಚಾ ಸ್ಪರ್ಧೆಗಳು ಮತ್ತು ರಸಪ್ರಶ್ನೆ ಮಾದರಿಯ ಚಟುವಟಿಕೆಗಳನ್ನು ಆಯೋಜಿಸುವುದು. ಈ ರೀತಿಯಲ್ಲಿ ಮೌಲ್ಯಮಾಪನವನ್ನು ಮಾಡಬಹುದಾಗಿರುತ್ತದೆ.
3. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದ ಪಠ್ಯ ಭಾಗ ಮೇಲಿನ ಮೌಲ್ಯಮಾಪನ ಪ್ರಕ್ರಿಯೆಯಲ್ಲಿ ಬರುವಂತೆ ನೋಡಿಕೊಳ್ಳುವುದು.

ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯು ಈ ಕೆಳಗಿನಂತಿರುತ್ತದೆ - **Semester End Exam (SEE):**

1. ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯಲ್ಲಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ. ಪ್ರತಿಪ್ರಶ್ನೆ 20 ಅಂಕಗಳಿಗೆ ಇರುತ್ತದೆ.
2. ಪ್ರತಿಯೊಂದು ವಿಭಾಗದಿಂದ 2 ಪೂರ್ಣ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
3. ಪ್ರತಿಯೊಂದು ಪೂರ್ಣ ಪ್ರಶ್ನೆಗೆ ಪೂರಕವಾಗಿ ಮತ್ತು ಸಂಬಂಧಿಸಿದಂತೆ ಉಪ ಪ್ರಶ್ನೆಗಳು ಇರುತ್ತವೆ.
4. ವಿದ್ಯಾರ್ಥಿ 10 ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಗಳಲ್ಲಿ 05 ಕ್ಕೆ ಉತ್ತರಿಸಬೇಕು. ಉತ್ತರಿಸುವಾಗ ಪ್ರತಿ ವಿಭಾಗದಿಂದ ಒಂದು ಪೂರ್ಣಪ್ರಮಾಣದ ಪ್ರಶ್ನೆಯನ್ನು ಉತ್ತರಿಸಬೇಕು.

(Suggested Learning Resource):

<u>ವಿಶ್ವವಿದ್ಯಾಲಯವು ನಿಗದಿಪಡಿಸಿರುವ ಪಠ್ಯಪುಸ್ತಕ :</u>

"ಸಾಹಿತ್ಯ ಸಿಂಚನ"

ಪ್ರಕಟಣೆ : ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ.

ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಮತ್ತು ಪೂರಕ ಓದಿಗಾಗಿ :

1. ಕನ್ನಡ ಸಾಹಿತ್ಯ ಪರಿಷತ್ತು, ಕನ್ನಡ ಅಭಿವೃದ್ಧಿ ಪ್ರಾಧಿಕಾರ ಮತ್ತು ಕನ್ನಡ ಹಾಗೂ ಸಂಸ್ಕೃತಿ ಇಲಾಖೆಯ ಈಗಾಗಲೇ ಪ್ರಕಟಿಸಿರುವ ಕನ್ನಡ ನಾಡು ನುಡಿ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ವಿಷಯಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಪ್ರಕಟಣೆಗಳನ್ನು ಗಮನಿಸುವುದು.
2. ಕರ್ನಾಟಕ ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ಪರಿಷತ್ತು ಪ್ರಕಟಗೊಳಿಸುತ್ತಿರುವ ವಿಜ್ಞಾನ ಸಾಹಿತ್ಯ ಮತ್ತು ತಂತ್ರಜ್ಞಾನದ ಬರಹಗಳನ್ನು ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡದ ಪಠ್ಯಗಳಿಗೆ ಪೂರಕವಾಗಿ ಓದುವುದು.

II Semester - BSc

Professional Writing Skills in English			
Course Code	**21ENG28**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	L:,T:1 P:1, = 03 Hours	SEE Marks	50
Total Hours of Pedagogy	03Hours/Week	Total Marks	100
Credits	02	Exam Hours	03 Hours

Course objectives:

The course (21ENG25) will enable the students,

- To Identify the Common Errors in Writing and Speaking of English.
- To Achieve better Technical writing and Presentation skills for employment.
- To read Technical proposals properly and make them to Write good technical reports.
- Acquire Employment and Workplace communication skills.
- To learn about Techniques of Information Transfer through presentation in different level.

Language Lab : To augment LSRW, grammar and Vocabulary skills (Listening, Speaking, Reading, Writing and Grammar, Vocabulary) through tests, activities, exercises etc., comprehensive web-based learning and assessment systems can be referred as per the AICTE / VTU guidelines.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

- ✓ Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools and software's to meet the present requirements of the Global employment market.
  - (i) Direct instructional method (Low /Old Technology),
  - (ii) Flipped classrooms (High/advanced Technological tools),
  - (iii) Blended learning (combination of both),
  - (iv) Enquiry and evaluation based learning,
  - (v) Personalized learning,
  - (vi) Problems based learning through discussion,
  - (vii) Following the method of expeditionary learning Tools and techniques,
  - (viii) Use of audio visual methods through language Labs in teaching of of LSRW skills.
- ✓ Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills in teaching of professional communicative skills in general.

Module-1

Identifying Common Errors in Writing and Speaking of English :

- Advanced English Grammar for Professionals with exercises, Common errors identification in parts of speech, Use of verbs and phrasal verbs, Auxiliary verbs and their forms, Subject Verb Agreement (Concord Rules with Exercises).
- Common errors in Subject-verb agreement, Noun-pronoun agreement, Sequence of Tenses and errors identification in Tenses. Advanced English Vocabulary and its types with exercises – Verbal Analogies, Words Confused/Misused.

Teaching - Learning Process	Chalk and talk method, Videos, Power Point presentation to teach Communication skills (LSRW Skills), Creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Module-2

Nature and Style of sensible writing :

- Organizing Principles of Paragraphs in Documents, Writing Introduction and Conclusion, Importance of Proper Punctuation, The Art of Condensation (Precise writing) and Techniques in Essay writing, Common Errors due to Indianism in English Communication, Creating Coherence and Cohesion, Sentence arrangements exercises, Practice of Sentence Corrections activities. Importance of Summarizing and Paraphrasing.
- Misplaced modifiers, Contractions, Collocations, Word Order, Errors due to the Confusion of words, Common errors in the use of Idioms and phrases, Gender, Singular & Plural. Redundancies & Clichés.

Teaching-Learning Process	Chalk and talk method, Videos, PowerPoint presentation and Animation videos to teach phonetics in Practical method, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies' real time situations).

Module-3

Technical Reading and Writing Practices :

- Reading Process and Reading Strategies, Introduction to Technical writing process, Understanding of writing process, Effective Technical Reading and Writing Practices , Introduction to Technical Reports writing, Significance of Reports, Types of Reports.
- Introduction to Technical Proposals Writing, Types of Technical Proposals, Characteristics of Technical Proposals. Scientific Writing Process.
- Grammar – Voice and Speech (Active and Passive Voices) and Reported Speech, Spotting Error Exercises, Sentence Improvement Exercises, Cloze Test and Theme Detection Exercises.

Teaching-Learning Process	Chalk and talk method, Videos, Power Point presentation to teach Grammar, Animation videos on communication and language skills, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Module-4

Professional Communication for Employment :

- The Listening Comprehension, Importance of Listening Comprehension, Types of Listening, Understanding and Interpreting, Listening Barriers, Improving Listening Skills. Attributes of a good and poor listener.
- Reading Skills and Reading Comprehension, Active and Passive Reading, Tips for effective reading.
- Preparing for Job Application, Components of a Formal Letter, Formats and Types of official, employment, Business Letters, Resume vs Bio Data, Profile, CV and others, Types of resume, Writing effective resume for employment, Model Letter of Application (Cover Letter) with Resume, Emails, Blog Writing, Memos (Types of Memos) and other recent communication types.

Teaching-Learning Process	Chalk and talk method, PowerPoint presentation to teach Grammar and phonetics, Animation videos on communication and language skills, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Module-5

Professional Communication at Workplace :

- Group Discussions – Importance, Characteristics, Strategies of a Group Discussions. Group Discussions is a Tool for Selection. Employment/ Job Interviews - Importance, Characteristics, Strategies of a Employment/ Job Interviews. Intra and Interpersonal Communication Skills - Importance, Characteristics, Strategies of a Intra and Interpersonal Communication Skills. Non-Verbal Communication Skills (Body Language) and its importance in GD and PI/JI/EI.
- Presentation skills and Formal Presentations by Students - Importance, Characteristics, Strategies of Presentation Skills. Dialogues in Various Situations (Activity based Practical Sessions in class by Students).

Teaching-Learning Process	Chalk and talk method, Power Point presentation to teach Grammar and phonetics, Animation videos on communication and language skills, creating real time stations in classroom discussions, Giving activities and assignments (Connecting Campus & community with companies real time situations).

Course outcome (Course Skill Set)

At the end of the course (21EGH28) the student will be able :

1. To understand and identify the Common Errors in Writing and Speaking.
2. To Achieve better Technical writing and Presentation skills.
3. To read Technical proposals properly and make them to Write good technical reports.
4. Acquire Employment and Workplace communication skills.
5. To learn about Techniques of Information Transfer through presentation in different level.

Assessment Details (both CIE and SEE) :

(methods of CIE need to be defined topic wise i.e.- MCQ, Quizzes, written test, Reports writing, Seminar and activities). The weight age of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain a minimum of 40% marks individually both in CIE and 35% marks in SEE to pass.

Continuous Internal Evaluation (CIE) :

1. Continuous internal evaluation (CIE) needs to be conducted for 50 marks like BSc Science courses - without any changes as per the University scheme and regulation (Modifications are not allowed).
2. Methods suggested: Quizzes, written quizzes and tests, Reports writing, Seminar and activities).
3. The class teacher has to decide the topic for the closed book test, Written Quiz, and Seminar. In the beginning, only the teacher has to announce the methods of CIE for the subject.

Semester end examination (SEE) Question paper pattern (Written Exam):

1. The question paper will have 10 full questions carrying equal marks.
2. Each full question will be for 20 marks.
3. There will be two full questions from each module.
4. Each full question will have Sub questions (Subject to a maximum of sub four questions) covering both the models.
5. The students have to answer 5 full questions, selecting one full question from each module.

Suggested Learning Resources :

1. **A Course in Technical English,** Cambridge University Press – 2020.
2. **Functional English** (**As per AICTE 2018 Model Curriculum**) Cengage learning India Pvt Limited [Latest Revised Edition] - 2020.
3. **Communication Skills** by Sanjay Kumar and Pushp Lata, Oxford University Press - 2018. **Refer it's workbook** for activities and exercises – "Communication Skills – I (A Workbook)" published by Oxford University Press – 2018.
4. **Professional Writing Skills in English,** Infinite Learning Solutions – (Revised Edition) 2021.
5. **Technical Communication** – Principles and Practice, Third Edition by Meenakshi Raman and Sangeetha Sharma, Oxford University Press 2017.
6. **High School English Grammar & Composition** by Wren and Martin, S Chandh & Company Ltd – 2015.
7. **Effective Technical Communication** – Second Edition by M Ashraf Rizvi, McGraw Hill Education (India) Private Limited – 2018.
8. **Intermediate Grammar, Usage and Composition** by M.L.Tichoo, A.L.Subramanian, P.R.Subramanian, Orient Black Swan – 2016.

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- ✓ Contents related activities (Activity-based discussions)
- ✓ For active participation of students instruct the students to prepare Flowcharts and Handouts
- ✓ Organizing Group wise discussions Connecting to placement activities
- ✓ Quizzes and Discussions, Seminars and assignments

II Semester

ENVIRONMENTAL STUDIES			
Course Code	**21ENV291**	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	02	SEE Marks	50
Total Hours of Pedagogy	25	Total Marks	100
Credits	02	Exam Hours	02

Course objectives:

- Understand the repossession of ecosystems.
- To communicate about biodiversity, natural, cultural environment and good human health.
- Impart the knowledge in efficient material cycles and make free from dangerous substances
- Sustainable use of natural resources efficient energy use and patterns of consumptions.

Teaching-Learning Process (General Instructions) desert, wetlands, Riverine, Oceanic and Lake
These are sample Strategies, which for group teacher can use to accelerate the attainment of the various course outcomes.

1. In addition to printing resources the knowledge in environmental concerns may be addressed through videos, animation of films.
2. Create and use Learner cantered approaches and resources.
3. Compare the objectives, concepts and issues included in the syllabus.
4. State the importance of environmental knowledge for real life.
5. Encourage the students for group learning and group discussions which helps how to conservate and protect the environment.
6. Seminars and quizzes may be arranged for students which helps to improve analytical skills.

Module-1 05 Hours

Ecosystems (Structure and Function); Forest, Desert, Wetlands, Riverine, Oceanic and Lake.
Biodiversity: Types, Value; Hot-spots, Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.

Teaching-Learning Process	Chalk and talk method, power point presentation.

Module-2 05 Hours

Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, solar, OTEC, Tidal and Wind.
Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, Cloud Seeding and Carbon Trading.

Teaching-Learning Process	Arrange practical visits to tidal and wind mills. For natural energy resource management chalk and talk method, power point presentation.

Module-3 05 Hours

Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): surface and ground water pollution, Noise pollution, Soil pollution and Air pollution.
Waste Management & Public Health Aspects: Bio-medical Wastes, Solid waste, Hazards wastes, E-Wastes, Industrial and Municipal Sludge.

Teaching-Learning Process	Chalk and talk method, power point presentation.

Module-4 05 Hours

Global Environmental Concerns (concept, polices and case-studies): Ground water depletion/recharging. Climate Change, Acid rain, Ozone Deletion, Radon and Fluoride problem in drinking water, Resettlement and rehabilitation of people , Environment Toxicology.

Teaching-Learning Process	Field survey, Chalk and talk method, Power point presentation.

Module-5 05 Hours

Latest Development in Environmental Pollution Mitigation Tools (concept and applications): G.I.S.& Remote sensing Environment impact Assessment, Environmental Management Systems, ISO14001; Environmental Stewardship- NGOs

Field work: Visit to an Environmental Laboratory or Green Building or Water Treatment Plant or Waste water treatment Plant Ought to be followed by understanding of process and its brief documentation.

Teaching-Learning Process	Visit to remote sensing stations, water treatment plants and waste water treatment plants. Videos and power point presentation.

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

1. Understand the principles of ecology and environmental issues that apply to air , land, and water issues on a global scale.
2. Develop critical thinking and /or observation skills and apply them to the analysis of a problem or question related to the environment.
3. Demonstrate ecology knowledge of a complex relationship between biotic and abiotic components.
4. Apply their ecological knowledge to illustrate and graph a problem and describe the realistic that managers face when dealing with complex issues.

Assessment Details (both CIE and SEE)

(methods of CIE need to be define topic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (2 Hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, report writing etc.
2. The class teacher has to decide the topic for closed book test, open book test, Written Quiz and Seminar. In the beginning only teacher has to announce the methods of CIE for the subject.

Semester End Examination:

Theory SEE will be conducted by University as per scheduled time table, with common question papers for subject

1. The question paper will have 100 objective questions.
2. Each question will be for 01 mark.
3. The students will have to answer all the questions in OMR Sheet.
4. The duration of examination will be 02 hours.

Suggested Learning Resources:

Books

1. Text book of Environmental Studies by Benny Joseph 2nd Edition,2012 - Tata Mc. Graw-Hill
2. Text book of Environmental Studies by S.M.Prakash 3rd Edition 2018- Pristine Publishing House Mangalore.
3. Environmental Studies- From Crisis to Cure. By R.Rajagopalan 2005-Oxford Publisher.

Reference books

1. Principals of Environmental Science and Engineering by Raman Siva Kumar 2nd Edition –Cengage learning, Singapore
2. Environmental Science- working with the Earth by Tyler Miller.Jr 11th. Edition, 2006- Thomson Books/Cole.

3. Text Book of Environmental and Ecology by Pratiba Sing, Anoop Sing and Piyush Malaviya. 1st Edition- Acme Learning Pvt. Ltd. New Delhi.

Web links and Video Lectures (e-Resources):

- https://www.youtube.com/watch?v=3OJeRAjr19o&list=PLUdUqUu9KRUJuMXxpalSh70mj8y3xDmv
- https://www.youtube.com/watch?v=8Upv8RlqhOQ
- https://www.youtube.com/watch?v=9JSNcsLQ3DO&list=PLUdUqUu9KRUJuMXxpalSh70mj8y3xDmv&index=10
- https://www.youtube.com/watch?v=2b8yHAfs
- https://www.youtube.com/watch?vMCvil2GmMKc

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

https://www.pinterest.com>env
https://www.uwsp.edu>wcee
http://ntpel.ac.in

II Semester

UNIVERSAL HUMAN VALUES AND PROFESSIONAL ETHICS			
Course Code	21UHV292	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	02	SEE Marks	50
Total Hours of Pedagogy	25	Total Marks	100
Credits	02	Exam Hours	02

Course objectives:

- Understand the human values, work ethics, and accept challenges in work place.
- To communicate about the need of education for life.
- Impart the knowledge on safety. Risk and responsibilities.
- Understand the human rights and global issues.

Teaching-Learning Process (General Instructions)desert, wetlands, Riverine, Oceanic and Lake

These are sample Strategies, which for group teacher can use to accelerate the attainment of the various course outcomes.

1. In addition to printing resources the knowledge in human values and professional ethics may be addressed through videos, animation of films.
2. Create and use Learner centred approaches and resources.
3. Compare the objectives, concepts and issues included in the syllabus.
4. State the importance of human values for real life.
5. Encourage the students for group learning and group discussions which helps how to conservate and protect the human values.
6. Seminars and quizzes may be arranged for students which helps to improve analytical skills.

Module-1

Human Values : Objectives, Morals, Values, Ethics, Integrity, Work Ethics, Service Learnings, Virtues, Respect for others, Living Peacefully ,Caring, Sharing, Honesty, Courage, Valuing Time, Cooperation, Commitment, Empathy, Self Confidence, Challenges in work Place, Spirituality, Yoga for Professional Excellence and stress Management.

Teaching-Learning Process	Chalk and talk method, power point presentation.

Module-2

Value Education : Introduction, Education for Fulfilling Life, Value Education, Skill Education ,Priority of Values over Skills, Implications of value Education(Correct identification of goals, Development of a Holistic Perspective, Evaluation of our beliefs, Solution of Existing Problems)

Teaching-Learning Process	Chalk and talk method, power point presentation. The teachers are expected to inform the students about values and skills to sustain happiness and prosperity

Module-3

Safety and Responsibilities :Safety and Risk, Risk analysis, Assessment of Safety and Risk, Safe Exit ,Risk benefit analysis, Safety Lessons from the Challenger , Collegiality and Loyalty, Collective Bargaining, Confidentiality, Conflicts And interest. Occupational Crimes.

Teaching-Learning Process	Chalk and talk method, power point presentation.

Module-4

Human Rights: Employee Rights,(Right to privacy, Right to choose outside activities ,Right to due process from Employer, Right to equal opportunity,Non-discrimination,), Intellectual Property Rights, (Intellectual Property, Need for protection of IP) Intellectual property norms(Patents, Copyright, Trademark, Trade secret).

Teaching-Learning Process	Chalk and talk method, Power point presentation.

Module-5

Global Issues: Globalisation, Multinational Corporations, Environmental Ethics, Computer Ethics, Weapons Development, Engineers as Advisors in planning and Policy Making, Moral leadership, codes of ethics ,Ethics and codes of ethics in MNC, Corporate Social Responsibility.

Teaching-Learning Process	Visit to multinational corporations to know about corporate social responsibilities practically. Videos and power point presentation

Course outcome (Course Skill Set)

At the end of the course the student will be able to :

1. Understand the human values, work ethics, respect to others and stress management.
2. Develops a universal approach to value and skill education by understanding reality and holistic perspective.
3. Assess safety, risk, confidentiality and occupational crimes.
4. Understand numerous human rights.
5. Comprehend planning, policy making and corporate social responsibilities.

Assessment Details (both CIE and SEE)

(methods of CIE need to be define topic wise i.e.- MCQ, Quizzes, Open book test, Seminar or micro project)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The student has to obtain minimum of 40% marks individually both in CIE and SEE to pass. Theory Semester End Exam (SEE) is conducted for 100 marks (2 Hours duration). Based on this grading will be awarded.

Continuous Internal Evaluation:

1. Methods suggested: Test, Open Book test, Written Quiz, Seminar, report writing etc.
2. The class teacher has to decide the topic for closed book test, open book test, Written Quiz and Seminar.
3. In the beginning only teacher has to announce the methods of CIE for the subject.

Semester End Examination:

Theory SEE will be conducted by University as per scheduled time table, with common question papers for subject

1. The question paper will have 100 objective questions.
2. Each question will be for 01 mark.
3. The students will have to answer all the questions in OMR Sheet.
4. T

Suggested Learning Resources:

Books

1. Human values by A.N.Tripaty New Age International publishers 2003.
2. A Text book on Professional Ethics and Human Values by R.S.Naagarazan 2 nd Edition New Age International Publishers.
3. Foundation of Ethics and Management by B.P, Banerjee. Excel Books.

Reference books

1. Science and Humanism by P.L.Dhar and R.R.Gaur Commonwealth Publishers.

2. Business Ethics by B.A.Karunakara Reddy.Pushpa.N and Archana. Vision Book House.
3. Manava Vyavahara Darsana, Jivana Vidya Prakasana, Amarkantak by A.Nagaraj.
4. Human Capital Management by Chandrasekhar, Gurumurthy, Mahesh and Nagarthna M Malagi Phoenix Publishing House.

Web links and Video Lectures (e-Resources):

- https://www.uhv.org.in/
- https://aktu.uhv.org.in/
- https://www.storyofstuff.com/

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

Charlie Chaplin, Modern Times United Artists, USA.

IIT Delhi, Modern Technology-The Untold Story

Anand Gandhi Right Here Right Now.2003 Cyclewala Production. .