BMS INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(Autonomous Institution Affiliated to VTU, Belagavi)
Scheme of Teaching and Examinations-2022
Outcome-Based Education (OBE)and Choice Based Credit System (CBCS)
(Effective from the academic year 2023 - 24)

II Semester (Electrical & Electronics Engineering Stream)   **Dept ETE**   **Physics Cycle**

Sl. No	Course and Course Code		Course Title	TD/PSB	Teaching Hours/Week				Examination					
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	Credits	
					L	T	P	S						
1	*ASC(IC)	BMATE201	Mathematics-II for EES	Maths	2	2	2	0	03	50	50	100	04	
2	#ASC(IC)	BPHYE202	Applied Physics for EES	PHY	2	2	2	0	03	50	50	100	04	
3	ESC	BBEE203	##Basic Electronics	EEE/ECE/ETE	3	0	0	0	03	50	50	100	03	
4	ESC -II	BESCK204E	Introduction to C Programming	Respective Engg Dept.	2	0	2	0	03	50	50	100	03	
5	ETC-II	BETCK205H	Introduction to Internet of Things (IoT)	Any Dept	3	0	0	0	03	50	50	100	03	
6	AEC	BPWSK206	Professional Writing Skills in English	Humanities	1	0	0	0	01	50	50	100	01	
7	HSMC	BKSKK207/ BKBKK207	Samskrutika Kannada/Balake Kannada	Humanities	1	0	0	0	01	50	50	100	01	
8	AEC/SDC	BIDTK258	Innovation and Design Thinking	Any Dept	0	2	0	0	02	50	50	100	01	
9	MC	BSLK208	Skill Lab	Any Dept			3		--	100	--	--	00	
				TOTAL	**14**	**06**	**06**	**0**	**19**	**400**	**400**	**800**	**20**	

 # Electrical & Electronics Engineering Students have to study BEEE203- Elements of Electrical Engineering compulsorily
Whereas Electronics and allied stream students have to study BBEE203 Basic Electronics compulsorily

SDA-Skill Development Activities, **TD/PSB**- Teaching Department / Paper Setting Board, **ASC**-Applied Science Course, **ESC**- Engineering Science Courses, **ETC**- Emerging Technology Course, **AEC**- Ability Enhancement Course, **HSMS**-Humanity and Social Science and Management Course, **SDC**- Skill Development Course, **CIE**–Continuous Internal Evaluation, **SEE**- Semester End Examination, **IC** – Integrated Course (Theory Course Integrated with Practical Course)

*-BMATE201 Shall have the 03 hours of theory examination (SEE), however, practical sessions question shall be included in the theory question papers. **** The mathematics subject should be taught by a single faculty member per division, with no sharing of the course(subject)module-wise by different faculty members.**
#-BPHYE202 SEE shall have the 03 hours of theory examination and 02-03 hours of practical examination.
ESC or ETC of 03 credits Courses shall have only a theory component (L:T :P:S=3:0:0:0) or if the nature the of course required practical learning syllabus shall be designed as an Integrated course (L:T:P:S= 2:0:2:0),. **All 01 Credit-** courses shall have the SEE of 01 hours duration and the pattern of the question paper shall be MCQ

(ESC-II) Engineering Science Courses-II					(ETC-II) Emerging Technology Courses-II				
Code	**Title**	**L**	**T**	**P**	**Code**	**Title**	**L**	**T**	**P**
BESCK204A	Introduction to Civil Engineering	3	0	0	**BETCK205A**	Smart materials and Systems	3	0	0
BESCK204B	Introduction to Electrical Engineering	3	0	0	**BETCK205B**	Green Buildings	3	0	0
BESCK204C	Introduction to Electronics Communication	3	0	0	**BETCK205C**	Introduction to Nano Technology	3	0	0
BESCK204D	Introduction to Mechanical Engineering	3	0	0	**BETCK205D**	Introduction to Sustainable Engineering	3	0	0
BESCK204E	Introduction to C Programming	2	0	2	**BETCK205E**	Renewable Energy Sources	3	0	0
					BETCK205F	Waste Management	3	0	0
					BETCK205G	Emerging Applications of Biosensors	3	0	0
					BETCK205H	Introduction to Internet of Things (IoT)	3	0	0
					BETCK205I	Introduction to Cyber Security	3	0	0
					BETCK205J	Introduction to Embedded System	3	0	0
(PLC-II) Programming Language Courses-II									
Code	**Title**	**L**	**T**	**P**					
BPLCK205A	Introduction to Web Programming	2	0	2					
BPLCK205B	Introduction to Python Programming	2	0	2					
BPLCK205C	Basics of JAVA programming	2	0	2					
BPLCK205D	Introduction to C++ Programming	2	0	2					
The course BESCK205E, Introduction to C Programming, and all courses under PLC and ETC groups can be taught by faculty of ANY DEPARTMENT									

- The student has to select one course from the ESC-II group.
- **EEE** Students shall opt for any one of the courses from the ESC-I group **except, BESCK204B-Introduction to Electrical Engineering and ECE/ETC/BM/ML** students shall opt any one of the courses from ESC-I **except BESCK204C Introduction to Electronics Communication**
- The students have to opt for the courses from ESC group without repeating the course in either 1st or 2nd semester
- The students must select one course from either ETC-II or PLC-II group.
- If students study the subject from ETC-I in 1st semester he/she has to select the course from PLC-II in the 2nd semester and vice-versa

Skill Lab: All students have to register for this course during the first week of I/II semester in Physics cycle. Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. This course shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

BMS Institute of Technology & Management
(An Autonomous Institute under VTU, Belagavi, Karnataka - 590018)
Avalahalli, Doddaballapur Main Road, Bengaluru – 560064

II Semester

Course Title:	**Mathematics II for EES**			
Course Code:		**BMATE201**	CIE Marks	50
Course Type (Theory/Practical/Integrated)		Integrated	SEE Marks	50
			Total Marks	100
Teaching Hours/Week (L:T:P:S)		2:2:2:0	Exam Hours	03
Total Hours of Pedagogy		40 hours Theory + 10-12 Lab slots	Credits	04

Course objectives: The goal of the course **Mathematics II for EES -(BMATE201)** is to

- **Familiarize** the importance of Vector Calculus, Vector Space and Linear transformation for electronics and electrical engineering.
- **Have an insight** into solving ordinary differential equations by using Laplace transform techniques.
- **Develop** the knowledge of solving electronics and electrical engineering problems numerically.

Teaching-Learning Process

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 students' 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 to 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 : Vector Calculus (8 hours)
Introduction to Vector Calculus in EC & EE engineering applications.   **Vector Differentiation:** Scalar and vector fields. Gradient, directional derivative, curl and divergence - physical interpretation, solenoidal and irrotational vector fields. Problems.   **Vector Integration:** Line integrals, Surface integrals. Applications to work done by a force and flux. Statement of Green's theorem and Stokes' theorem. Problems.   **Self-Study:** Volume integral and Gauss divergence theorem.   **Applications:** Conservation of laws, Electrostatics, Analysis of streamlines and electric potentials.   **(RBT Levels: L1, L2 and L3)**
Module - 2 :Vector Space and Linear Transformations (8 hours)
Importance of Vector Space and Linear Transformations in the field of EC & EE engineering applications.   **Vector spaces:** Definition and examples, subspace, linear span, Linearly independent and dependent sets, Basis and dimension.   **Linear transformations**: Definition and examples, Algebra of transformations, Matrix of a linear transformation. Change of coordinates, Rank and nullity of a linear operator, Rank-Nullity theorem. Inner product spaces and orthogonality.   **Self-study:** Angles and Projections. rotation, reflection, contraction and expansion.   **Applications:** Image processing, AI & ML, Graphs and networks, Computer graphics.   **(RBT Levels: L1, L2 and L3)**
Module – 3 : Laplace Transform (8 hours)
Importance of Laplace Transform for EC & EE engineering applications.   Existence and Uniqueness of Laplace transform (LT), transform of elementary functions, region of convergence. Properties–Linearity, Scaling, t-shift property, s-domain shift, differentiation in the s-domain, division by t, differentiation and integration in the time domain. LT of special functions-periodic functions (square wave, saw-tooth wave, triangular wave, full & half wave rectifier), Heaviside Unit step function, Unit impulse function.   **Inverse Laplace Transforms:**   Definition, properties, evaluation using different methods, convolution theorem (without proof), problems and applications to solve ordinary differential equations.   **Self-Study:** Verification of convolution theorem.   **Applications:** Signals and systems, Control systems, LR, CR & LCR circuits.   **(RBT Levels: L1, L2 and L3)**
Module – 4 : Numerical Methods -1 (8 hours)
Importance of numerical methods for discrete data in the field of EC & EE engineering applications.   Solution of algebraic and transcendental equations: Regula-Falsi method and Newton-Raphson method (only formulae). Problems.   Finite differences, Interpolation using Newton's forward and backward difference formulae, Newton's divided difference formula and Lagrange's interpolation formula (All formulae without proof). Problems.   N**umerical integration**: Trapezoidal, Simpson's $(1/3)^{rd}$ and $(3/8)^{th}$ rules (without proof). Problems.

Self-Study: Bisection method, Lagrange's inverse Interpolation, Weddle's rule.
Applications: Estimating the approximate roots, extremum values, area, volume, and surface area.
(RBT Levels: L1, L2 and L3)

Module – 5 : Numerical Methods -2 (8 hours)

Introduction to various numerical techniques for handling EC & EE applications. Numerical Solution of Ordinary Differential Equations (ODEs):
Numerical solution of ordinary differential equations of first order and first degree - Taylor's series method, Modified Euler's method, Runge-Kutta method of fourth order and Milne's predictor-corrector formula (No derivation of formulae). Problems.
Self-Study: Adams-Bashforth method.
Applications: Estimating the approximate solutions of ODE for electric circuits.
(RBT Levels: L1, L2 and L3)

List of Laboratory experiments (2 hours/week per batch/ batch strength 15)

10 lab sessions + 1 repetition class + 1 Lab Assessment

1	Finding gradient, divergent, curl and their geometrical interpretation and verification of Green's theorem
2	Computation of basis and dimension for a vector space and graphical representation of linear transformation
3	Visualization in time and frequency domain of standard functions
4	Computing inverse Laplace transform of standard functions
5	Laplace transform of convolution of two functions
6	Solution of algebraic and transcendental equations by Regula-Falsi and Newton-Raphson methods
7	Interpolation/Extrapolation using Newton's forward and backward difference formulae
8	Computation of area under the curve using Trapezoidal, Simpson's $(1/3)^{rd}$ and $(3/8)^{th}$ rules
9	Solution of ODE of first order and first degree by Taylor's series and Modified Euler's methods
10	Solution of ODE of first order and first degree by Runge-Kutta 4th order and Milne's predictor-corrector methods

Suggested software's: MATHEMATICA/ MATLAB/ PYTHON/ SCILAB

Course outcome (Course Skill Set)
At the end of the course the student will be able to:

CO1	Understand the applications of vector calculus with reference to solenoidal, irrotational vectors, Line integral and surface integral.
CO2	Demonstrate the idea of Linear dependence and independence of sets in the vector space, and linear transformation
CO3	To understand the concept of Laplace transform and to solve initial value problems.
CO4	Apply the knowledge of numerical methods in solving physical and engineering phenomena.
CO5	Get familiarize with modern mathematical tools namely MATHEMATICA/MATLAB/PYTHON/ SCILAB

		CONTINUOUS INTERNAL EVALUATION (CIE)				

Mathematics for EES – II (L:T:P:: 2:2:2/Credit: 04)   **Duration:** 03 Hours

		Internal Assessments (IAs)	Max. Marks	Total Marks	Marks after scale-down	Final Marks
Theory Component	IA	IA-1 (1.5 hr)	40	15 **Passing Standard (06)**	25 Marks **Passing Standard** (40% i. e 10 Marks)	25+25 = 50
		IA-2 (1.5 hr)	40			
	Assignment	A-1 (1 hr)	10	10 **Passing Standard (04)**		
	AAT	AAT-1(1 hr)	10			
Practical Component	Cumulative Marks of Experiments	10 Marks/ Experiment (including regular and open-ended experiments) (Write-up, Conduction, Viva-voce, Record, etc.) (2 hrs /Week /batch)(Strength:15)	-	15 **Passing Standard (06)**	25 Marks **Passing Standard** (40% i. e 10 Marks)	
	IA	IA-1 (02/03 hrs)	50	10 **Passing Standard (04)**		

	SEMESTER END EXAMINATION (SEE)				

Examination Duration: 03 hrs   **Max. Marks:** 100

Note: The maximum of 05 questions to be set from the practical component of integrated course, the total marks of all questions should not be more than 20 marks.

		Max. Marks	Max. Marks	Final Marks
Theory Component	No. of Modules	05	200	50
	No. of Questions/Module	02	40	
	Marks/Question	20	20	100
	No. of Questions to be answered/ module	01	20	**Passing Standard**
	No. of Questions to be answered/ course	05	100	(35% i.e 18 Marks)

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if **CIE Score ≥ 40 %**, **SEE Score ≥ 35 %,** and a sum total of **CIE + SEE Score ≥ 40%**

Suggested Learning Resources:

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

Text Books

B. S. Grewal: "Higher Engineering Mathematics", Khanna Publishers, 44th Ed., 2021.

E. Kreyszig: "Advanced Engineering Mathematics", John Wiley & Sons, 10th Ed., 2018.

Reference Books

V. Ramana: "Higher Engineering Mathematics", McGraw Hill Education, 11th Ed., 2017.

Srimanta Pal & Subodh C.Bhunia: "Engineering Mathematics", Oxford University Press, 3rd Ed., 2016.

N.P Bali and Manish Goyal: "A Textbook of Engineering Mathematics", Laxmi Publications, 10th Ed., 2022.

C. Ray Wylie, Louis C. Barrett: "Advanced Engineering Mathematics", McGraw Hill Book Co., New York, 6th Ed., 2017.

Gupta C.B, Sing S.R and Mukesh Kumar: "Engineering Mathematic for Semester I and II", McGraw Hill Education (India) Pvt. Ltd, 2015.

H.K. Dass and Er. Rajnish Verma: "Higher Engineering Mathematics", S.Chand Publication, 3rd Ed., 2014.

James Stewart: "Calculus", Cengage Publications, 7th Ed., 2019.

David C Lay: "Linear Algebra and its Applications", Pearson Publishers, 4th Ed., 2018.

Gareth Williams: "Linear Algebra with applications", Jones Bartlett Publishers Inc., 6th Ed., 2017.

. **Gilbert Strang:** "Linear Algebra and its Applications", Cengage Publications, 4th Ed., 2022.

Web links and Video Lectures (e-Resources):

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

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

- Quizzes
- Assignments
- Seminar

COs and POs Mapping (Individual teacher has to fill up)

COs	POs						
	1	**2**	**3**	**4**	**5**	**6**	**7**
CO1	3	2					
CO2	3	2					
CO3	3	2					
CO4	3	2					
CO5					3		

Level 3- Highly Mapped,   Level 2-Moderately Mapped,   Level 1-Low Mapped,   Level 0- Not Mapped

DEPARTMENT OF PHYSICS			
Choice Based Credit System (CBCS)			
SEMESTER - I/II			
APPLIED PHYSICS FOR EEE STREAM (2:2:2) 4			
(SPECIFIC TO ELECTRICAL STREAM BRANCHES)			
(Effective from the academic year 2022 -2023)			
Course Code	**BPHYE102/202**	**CIE Marks**	**50**
Course Type	**Integrated**	**Course Credit**	**4**
Teaching Hours/Week (L:T:P:S)	**2:2:2:0**	**SEE Marks**	**50**
Total Number of contact Hours Theory/lab sessions	**40 hours Theory + 12 lab sessions**	**Exam Hours**	**03 + 02**

Course Objectives:

This course will enable students to:
- Understand the principles of quantum mechanics and its applications.
- Study the dielectric and superconducting properties of materials.
- Understand the fundamentals of Lasers, optical fibers and their application.
- Understand the fundamentals of vector calculus and EM waves, semiconductors and devices.
- Apply the concepts required for the measurement of physical parameters related to engineering.
- Compare and analyze the results of the experiments.

Preamble: Introduction, Quantum Mechanics - Applications. Electrical Properties of Solids.   Lasers and Optical fibers, Maxwell's equations and EM waves, Semiconductors and devices.

Module – 1
Quantum Mechanics

Self-study topics: Dual nature of light and wave particle dualism

Introduction, de-Broglie hypothesis and Matter Waves, de-Broglie wavelength and derivation of expression by analogy, Representation of matter waves, Phase Velocity and Group Velocity (qualitative), Heisenberg's Uncertainty Principle and its application (Non-existence of electron inside the nucleus-Relativistic case), Principle of wave particle Complementarity, Wave Function "ψ" and its properties, time dependent (qualitative), time independent Schrodinger wave equation (derivation), Physical significance of a wave function and Born Interpretation, Probability (Expectation value), Eigen functions and Eigen Values, Particle inside a one-dimensional infinite potential well and extended to free particle, Mapping of Wavefucntion and probability density, Numerical Problems.

(8 Hours)

Module – 2
Electrical Properties of Solids

Self-learning: Basics of dielectrics, Temperature dependence of resistivity of metals.

Dielectric Properties: Introduction, Polar and non-polar dielectrics, Types of Polarization, internal fields in solid, Clausius-Mossotti equation (Derivation), solid, liquid and gaseous dielectrics. Application of dielectrics in transformers, Capacitors and Electrical Insulation. Numerical problems.

Superconductivity: Introduction, Meissner's Effect, Critical current, Silsbee Effect, Types of Super Conductors, Temperature dependence of Critical field, BCS theory (Qualitative), High Temperature superconductivity. Applications- SQUID, MAGLEV. Numerical problems.

Module – 3

Lasers and Optical Fibers

Self-learning: Characteristics of LASER, Propagation Mechanism &TIR in optical fiber

Lasers: Introduction, Interaction of radiation with matter, Expression for energy density equation and its significance. Requisites of a Laser system. Conditions for Laser action. Principle, Construction and working of Nd-YAG laser. Application of Lasers in Defence (Laser range finder) and Laser Printing. Numerical problems.

Optical Fibers: Introduction, Propagation mechanism, TIR, angle of acceptance, Numerical aperture, fractional index change, Modes of propagation, Number of modes and V parameter, Types of optical fibers. Attenuation and expression for attenuation coefficient (qualitative), Attenuation spectrum of an optical fiber with optical windows, Merits and demerits. Applications: Discussion of the block diagram of point-to-point communication, Intensity-based fiber optic displacement sensor. Numerical problems.

(8 Hours)

Module – 4

Maxwell's Equations and EM waves

Self-learning: Fundamentals of vector calculus, Description of laws of electrostatics, magnetism and Faraday's laws of EMI, Ampere's circuital law.

Maxwell's Equations: Introduction, Divergence and curl of electric field and magnetic field (static), Gauss' divergence theorem and Stokes' theorem (qualitative). Derivations of four Maxwell's equations and its significance. Current density & equation of Continuity (with derivation); displacement current (with derivation) Maxwell's equations in vacuum. Numerical problems.

EM Waves: The wave equation in differential form in free space (Derivation of the equation using Maxwell's equations), Plane electromagnetic waves in vacuum, and their transverse nature. Numerical problems**.**

(8 Hours)

Module – 5

Semiconductor and Devices

Self-learning: Basics of Semiconductors, Band Theory of Solids, Photodiode.

Introduction, Fermi energy and Fermi level, Fermi level in intrinsic semiconductors, Expression for concentration of electrons in conduction band & holes concentration in valance band (qualitative), Law of mass action, Electrical conductivity of a semiconductor (derivation), Hall effect, Expression for Hall coefficient (derivation) and its application.
Construction and working of Semiconducting Laser, Four probe method to determine resistivity, solar cell, Photodiode and Power Responsivity, Phototransistor. Numerical problems.

(8 Hours)

Laboratory component
(10 experiments have to be completed from the list of experiments)

List of experiments:
1. Transistor Characteristics
2. Photo-Diode Characteristics
3. Magnetic Field at any point along the axis of a circular coil

4. Fermi Energy
5. Four Probe Method
6. Black Box
7. Energy Gap of the given Semiconductor
8. Plank's Constant using LEDs
9. Numerical Aperture using optical fiber
10. Wavelength of LASER using Grating
11. Charging and Discharging of a Capacitor
12. Series and Parallel LCR Circuits
13. Dielectric Constant
14. Design the circuit for series/parallel LCR with different given LCR components
15. Determine the wavelength of LED using Planck's relations
16. PHET Interactive Simulations
    (https://phet.colorado.edu/en/simulations/filter?subjects=physics&type=html,prototype)
17. Online Circuit Simulator (https://www.partsim.com/simulator)
18. Study of Electrical quantities using spreadsheet.

Course outcomes (COs):
At the end of the semester the students are able to

CO1	Apply the principles of quantum mechanics and superconductivity in Engineering applications.
CO2	Apply the principles of Lasers, Optical fibres and Maxwell's equations in the field of Photonics.
CO3	Analyse significant properties semiconductors, dielectrics and its different applications in engineering.
CO4	Evaluate the physical parameters for the related technology.
CO5	Evaluate and interpret the obtained experimental result (s) related to engineering fields.

CO-PO mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2										
CO2	3	3										1
CO3	3	3										1
CO4	3	2	1		2							1
CO5	3	2	1		2			1	1			1

Level 3: Highly mapped   Level 2: Moderately mapped   Level 1: Low mapped

Continuous Internal Evaluation (CIE) and Semester End Examination (SEE)
PHYSICS (L:T:P/Credit = 2:2:2/4)

IPCC COURSES: 4 CREDITS AND 3 CREDITS					
Evaluation Type		**Internal Assessments (IAs)**	**Test/ Exam Marks Conducted for**	**Marks to be scale down to**	**Min. Marks to be Scored**	**Evaluation Details**
Theory Component	CIE – IA Tests	CIE – Test 1 (1.5 hr)	40	15	06	Average of two internal assessment tests each of 40 marks, scale down the marks scored to 15 marks
		CIE – Test 2 (1.5 hr)	40			
	CIE – CCAs (Comprehensive Continuous Assessment)	CCA -1	10	10	04	Any two assessment methods as per clause 22OB4.2 of regulations (if assessment is project based, then one assessment method may be adopted)
		CCA-2	10			
	Total CIE Theory			25	10	Scale down marks of tests and CCAs to 25
Practical Component	CIE - Practical		-	15	06	Conduction of experiments and preparation of laboratory records etc.
	CIE Practical Test		50	10	04	One test after all experiment's to be conducted for 50 marks
	Total CIE Practical			25	10	Scale down marks of experiments, record and test to 25
Total CIE Theory + Practical				50	20	
SEE			100	50	18	SEE exam is a theory exam, conducted for 100 marks, scored marks are scaled to 50 marks
CIE + SEE				100	40	

The minimum marks to be secured in CIE to appear for SEE shall be 10 (40% of maximum marks-25) in the theory component and 10 (40% of maximum marks -25) in the practical component. The laboratory component of the IPCC shall be for CIE only. However, in SEE, the questions from the laboratory component shall be included in their respective modules only.

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)

1. M N Avadhanulu and P G Kshirsagar, "Engineering Physics," S. Chand and company Pvt. Ltd., 11th edition, 2014.
2. R K Gaur & S L Gupta, "Engineering Physics," Dhanpat Rai Publications, 8th edition, 2018.
3. Vibrations and Waves (MIT introductory Physics Series), A P French, CBS, 2003 Edition
4. Timoshenko, S. and Goodier J.N. "Theory of Elasticity", 2nd Edition, McGraw Hill Book Co, 2001.
5. Sadhu Singh, "Theory of Elasticity", Khanna Publishers, 1997
6. Mechanical Properties of Engineered Materials by Wole Soboyejo, CRC Press; 1st edition, 2002
7. Heat & Thermodynamics and Statistical Physics (XVIII-Edition) – Singhal, Agarwal &Satyaprakash – Pragati Prakashan, Meerut, 2006. 4
8. Heat and Thermodynamics (I-Edition) – D.S.Mathur - S. Chand & Company Ltd., New-Delhi, 1991
9. Heat and Thermodynamics,Brijlal& Subramanyam,S. Chand & Company Ltd., New-Delhi.
10. Materials Characterization Techniques-Sam Zhang, Lin Li, Ashok Kumar, CRC Press, First Edition, 2008.
11. Characterization of Materials- Mitra P.K . Prentice Hall India Learning Private Limited.
12. Nanoscience and Nanotechnology: Fundamentals to Frontiers – M.S.Ramachandra Rao & Shubra Singh, Wiley, India Pvt Ltd.
13. Nano Composite Materials-Synthesis, Properties and Applications, J. Parameswaranpillai, N.Hameed, T.Kurian, Y. Yu, CRC Press.
14. Shock waves made simple by Chintoo S Kumar, K Takayama and K P J Reddy: Willey India Pvt. Ltd,Delhi,2014
15. S O Pillai, "Solid State Physics," New Age International publishers, 8th edition, 2017.
16. David Jeffery Griffiths, "Introduction to Electrodynamics", Pearson New International Edition, 4th edition, 2017
17. B B Laud, "Lasers and Non-Linear Optics," New Age International publishers, 3rd edition, 2018.
18. Arthur Beiser, "Concepts of Modern Physics", Tata McGraw-Hill Education, 6th edition, 2010.
19. Resnick, Walker and Halliday "Principles of Physics, Wiley publisher, 10th edition, 2015.
20. Ben G. Streetman, Sanjay Banerjee, "Solid State Electronic Devices" Pearson Prentice Hall, 6th edition, 2010.
21. S. K. Dwivedi, A Textbook of Engineering Physics, I K International Publishing House Pvt. Ltd., 1st edition 2010.
22. C L Arora, "B.Sc. Practical Physics", S CHAND and company Ltd. 1st edition 2010
   Worsnop and Flint, "Advanced physics practical for students", Metuen and Co, London 2005.
23. D Chattopadhyay and P C Rakshit, "Advanced course in Practical Physics", New central book agency 8th edition, 2013.

Web links and Video Lectures (e-Resources):

1. Simple Harmonic motion:https://www.youtube.com/watch?v=k2FvSzWeVxQ
2. Shock waves:https://physics.info/shock/
3. Shock waves and theirapplications:https://www.youtube.com/watch?v=tz_3M3v3kxk
4. Stress-strain curves:https://web.mit.edu/course/3/3.11/www/modules/ss.pdf
5. Stress curves:https://www.youtube.com/watch?v=f08Y39UiC-o
6. Fracture in materials:https://www.youtube.com/watch?v=x47nky4MbK8
7. Thermoelecticity:https://www.youtube.com/watch?v=2w7NBuu5w9c&list=PLtkeUZItwHK5y6qy1GFxa4Z4RcmzUaaz6

B.E ELECTRONICS AND COMMUNICATION ENGINEERING			
Choice Based Credit System (CBCS)			
SEMESTER – I/II			
Course Title:	**Basic Electronics (For ECE and Allied Branches)**		
Course Code:	**BBEE103/203**	CIE Marks	50
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	3:0:0:0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03

Course objectives: Students will be taught
- Operation of Semiconductor diode, Zener diode and Special purpose diodes and their applications.
- Biasing circuits for transistor (BJT) as an amplifier.
- Study of linear Op-amps and its applications.
- Logic circuits and their optimization.
- Principles of Transducers and Communication.

Teaching-Learning Process
These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective
1. Lecture method (L) does not mean only the traditional lecture method, but a different type of teaching method may be adopted to develop the outcomes.
2. Show Video/animation films to explain the functioning of various analog and digital circuits.
3. 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.
4. Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.
5. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Preamble: Evolution of Electronics, industrial development, research, impact of electronics on society and its economic growth, scope and career prospective in the field of electronics.

Semiconductor Diodes: Introduction, PN Junction diode, Characteristics and Parameters, Diode Approximations, DC Load Line analysis (Text 1: 2.1,2.2,2.3,2.4)
Diode Applications: Introduction, Half Wave Rectification, Full Wave Rectification, Full Wave Rectifier Power Supply: Capacitor Filter Circuit, RC **π** Filter (includes numerical)
(Text 1: 3.1,3.2,3.4,3.5)
Zener Diodes: Junction Breakdown, Circuit Symbol and Package, Characteristics and Parameters, Equivalent Circuit, Zener Diode Voltage Regulator. (Text1:2.9, 3.7)　　　　　　　**(8 Hours)**

Module-2

Bipolar Junction Transistors: Introduction BJT Voltages & Currents, BJT Amplification, Common Base Characteristics, Common Emitter Characteristics, Common Collector Characteristics, BJT Biasing: Introduction, DC Load line and Bias point
(Text 1: 4.2, 4.3, 4.5,4.6, 5.1)
Field Effect Transistor: MOSFETs: Enhancement MOSFETs, Depletion Enhancement MOSFETs, CMOS as an inverter (Text 1: 9.1,9.2,9.5)　　　　　　　**(8 Hours)**

Module-3

Operational Amplifiers: Introduction,The Operational Amplifier, Block Diagram Representation of Typical Op-Amp, Schematic Symbol, Op-Amp parameters - Gain, input resistance, Output resistance, CMRR, Slew rate, Bandwidth, input offset voltage, Input bias Current and Input offset Current, The Ideal Op-Amp , Equivalent Circuit of Op-Amp, Open Loop Op-Amp configurations, Differential Amplifier, Inverting & Non Inverting Amplifier

Op-Amp Applications: Inverting Configuration, Non-Inverting Configuration, Differential Configuration, Voltage Follower, Integrator, Differentiator(Text 2: 1.1, 1.2, 1.3, 1.5, 2.2, 2.3, 2.4, 2.6, 6.5.1, 6.5.2, 6.5.3, 6.12, 6.13).   **(8 Hours)**

Module-4

Boolean Algebra and Logic Circuits: Binary numbers, Number Base Conversion, octal & Hexa Decimal Numbers, Complements, Basic definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and Properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, Other Logic Operations, Digital Logic Gates (Text 3: 1.2, 1.3, 1.4, 1.5,2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7)

Combinational logic: Introduction, Design procedure, Adders- Half adder, Full adder (Text 3:4.1, 4.2, 4.3)
(8 Hours)

Module-5

Introduction to Transducers: Introduction, Resistive Transducers, Inductive Transducers, Capacitive Transducers, Thermal transducers, Optoelectronic transducer, and Piezoelectric transducers (Text 4: Chapter 18: 18.1, 18.2, 18.3, 18.4, 18.5)

Communications: Introduction to communication, Communication System, Modulation (Text book 5: 1.1, 1.2, 1.3   **(8 Hours)**

Course outcome (Course Skill Set)

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

CO1: Develop the basic knowledge on construction, operation and characteristics of semiconductor devices.

CO2: Apply the acquired knowledge to construct small scale circuits consisting ofsemiconductor devices

CO3: Develop competence knowledge to construct basic digital circuit by make use of basic gateand its function.

CO4: Construct the conceptual blocks for basic communication system.

CO5: Apply the knowledge of various transducers principle in sensor system.

Suggested Learning Resources:
Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year)
1. Electronic Devices and Circuits, David A Bell, 5th Edition, Oxford, 2016
2. Op-amps and Linear Integrated Circuits, Ramakanth A Gayakwad, Pearson Education, 4th Edition
3. Digital Logic and Computer Design, M. Morris Mano, PHI Learning, 2008 ISBN-978-81-203-0417-8
4. Electronic Instrumentation and Measurements (3rd Edition) – David A. Bell, Oxford University Press, 2013
5. Electronic Communication Systems, George Kennedy, 4th Edition, TMH

Web links and Video Lectures (e-Resources):
- https://nptel.ac.in/courses/122106025
- https://nptel.ac.in/courses/108105132
- https://nptel.ac.in/courses/117104072

B.E COMPUTER SCIENCE AND ENGINEERING				
Choice Based Credit System (CBCS)				
SEMESTER – I/II				
ESC – II: Introduction to C Programming (2:0:2) 3				
(Effective from the academic year 2022-2023)				
Course Code	**BESCK104E/204E**		CIE Marks	50
Teaching Hours/Week (L:T:P)	2:0:2		SEE Marks	50
Total Number of Contact Hours	26(L) + 26(T)		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.

Module – I

Introduction to C: Introduction to computers, input and output devices, designing efficient programs. Introduction to C, Structure of C program, Files used in a C program, Compilers, Compiling and executing C programs, variables, constants, Input/output statements in C.

Textbook: Chapter 1.1-1.9, 2.1-2.2, 8.1 – 8.6, 9.1-9.14   **(6 Hours)**

Module – II

Operators in C, Type conversion and typecasting.

Decision control and Looping statements: Introduction to decision control, Conditional branching statements,iterative statements, nested loops, break and continue statements, goto statement.

Textbook: Chapter 9.15-9.16, 10.1-10.6   **(6 Hours)**

Module – III

Functions: Introduction using functions, Function definition, function declaration, function call, return statement, passing parameters to functions, scope of variables, storage classes, recursive functions.

Arrays: Declaration of arrays, accessing the elements of an array, storing values in arrays, Operations on arrays,Passing arrays to functions.

Textbook: Chapter 11.1-11.13, 12.1-12.   **(6 Hours)**

	Module – IV

Two dimensional arrays, operations on two-dimensional arrays, two-dimensional arrays to functions, multidimensional arrays.

Applications of arrays and introduction to strings: Applications of arrays, case study with sorting techniques.

Introduction to strings: Reading strings, writing strings, summary of functions used to read and write characters.Suppressing input using a Scan set.

Textbook: Chapter 12.7-12.12 **(6 Hours)**

	Module – V

Strings: String taxonomy, operations on strings, Miscellaneous string and character functions, arrays of strings.

Pointers: Understanding the Computer's Memory, Introduction to Pointers, Declaring Pointer Variables

Structures: Introduction to structures.

Textbook:Chapter13.1-13.6,14.1-14.3,15.1 **(6 Hours)**

List of Laboratory experiments (2 hours/week per batch/ batch strength 36)

1	C Program to find Mechanical Energy of a particle using $E = mgh + 1/2\, mv^2$.
2	C Program to convert Kilometers into Meters and Centimeters.
3	C Program To Check the Given Character is Lowercase or Uppercase or Special Character.
4	Program to balance the given Chemical Equation values x, y, p, q of a simple chemical equation of the type: The task is to find the values of constants b1, b2, b3 such that the equation is balanced on both sides and it must be the reduced form.
5	Implement Matrix multiplication and validate the rules of multiplication.
6	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.
7	Sort the given set of N numbers using Bubblesort.
8	Write functions to implement string operations such as compare, concatenate, string length. Convince the parameter passing techniques.
9	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.
10	Develop a program using pointers to compute the sum, mean and standard deviation of all elements stored in an array of N real numbers.

Suggested software's : gcc compiler, Ubuntu Operating System

Course Outcomes

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

CO1. Elucidate the basic architecture and functionalities of a computer and recognize the hardware parts.

CO2. Apply programming constructs of C language to solve the real-world problem.

CO3. Explore user-defined data structures like arrays in implementing solutions to problems like searching and sorting.

CO4. Explore user-defined data structures like structures, unions and pointers in implementing solutions.

CO5. Design and Develop Solutions to problems using modular programming constructs using functions.

Text books:

1. Computer fundamentals and programming in c, "Reema Thareja", Oxford University, Second edition, 2017.

References:

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

Web links and Video Lectures (e-Resources):

1. Elearning.vtu.ac.in/econtent/courses/video/BS/15PCD23.html
2. https://nptel.ac.in/courses/106/105/106105171/ MOOC courses can be adopted for more clarity inunderstanding the topics and verities of problem solving methods.

I /II Semester

Course Title:	**Introduction to Internet of Things**		
Course Code:	**BETCK105H/205H**	CIE Marks	50
Course Type (Theory/Practical/Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P:S)	3:0:0:0	Exam Hours	03
Total Hours of Pedagogy	40 hours	Credits	03

Course objectives:

The course Introduction to Internet of Things (BETCK105H/205H) will enable the students,

· Understand about the fundamentals of Internet of Things and its building blocks along

with their characteristics.

· Understand the recent application domains of IoT in everyday life.

· Gain insights about the current trends of Associated IOT technologies and IOT Analytics.

Teaching-Learning Process These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective.

1.Lecturer method (L) need not to 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 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 with different circuits/logic 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

9. Use any of these methods: Chalk and board, Active Learning, Case Studies

Module-1 (**08 hours**)
Basics of Networking: Introduction, Network Types, Layered network models
Emergence of IoT: Introduction, Evolution of IoT, Enabling IoT and the Complex Interdependence of Technologies, IoT Networking Components
Textbook 1: Chapter 1- 1.1 to 1.3 Chapter 4 – 4.1 to 4.4
Module-2 (8 hours)
IoT Sensing and Actuation: Introduction, Sensors, Sensor Characteristics, Sensorial Deviations, Sensing Types, Sensing Considerations, Actuators, Actuator Types, Actuator Characteristics.
Textbook 1: Chapter 5 – 5.1 to 5.9
Module-3 (8 hours)
IoT Processing Topologies and Types: Data Format, Importance of Processing in IoT, Processing Topologies, IoT Device Design and Selection Considerations, Processing Offloading.
Textbook 1: Chapter 6 – 6.1 to 6.5
Module-4 (8 hours)
ASSOCIATED IOT TECHNOLOGIES
Cloud Computing: Introduction, Virtualization, Cloud Models, Service-Level Agreement in Cloud Computing, Cloud Implementation, Sensor-Cloud: Sensors-as-a-Service. IOT CASE STUDIES Agricultural IoT – Introduction and Case Studies
Textbook 1: Chapter 10– 10.1 to 10.6; Chapter 12- 12.1-12.2
Module-5 (8 hours)
IOT CASE STUDIES AND FUTURE TRENDS
Vehicular IoT – Introduction
Healthcare IoT – Introduction, Case Studies
IoT Analytics – Introduction
Textbook 1: Chapter 13– 13.1; Chapter 14- 14.1-14.2; Chapter 17- 17.1

Course outcome (Course Skill Set)

At the end of the course Introduction to IOT (22BETCK105H/205H) the student will be able to:

1	Understand the characteristics and scopes of IoT
2	Apply the knowledge of device management, networking to build an IoT solution
3	Analyze the different associated technologies for IoT system
4	Interpret the given case study material related to IoT
5	Develop an IoT application using modern tool and submit report.

CO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9		PO10	PO11	PO12
1													
2	3												
3		3											
4		3											
5					3	3			3		3		3

Suggested Learning Resources:

Books (Title of the Book/Name of the author/Name of the publisher/Edition and Year) 1. Sudip Misra, Anandarup Mukherjee, Arijit Roy, "Introduction to IoT", Cambridge University Press 2021.

References:

2. S. Misra, C. Roy, and A. Mukherjee, 2020. Introduction to Industrial Internet of Things and Industry 4.0. CRC Press.

3. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)",1st Edition, VPT, 2014. 4. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013.

Suggested Learning Resources:

Textbook:

1. **"Scientific Foundations of Health"** – Study Material Prepared by Dr. L Thimmesha, Published in VTU - University Website.
2. **"Scientific Foundations of Health"-** (ISBN-978-81-955465-6-5) published by Infinite Learning Solutions, Bangalore – 2022.
3. **Health Psychology - A Textbook,** FOURTH EDITION by Jane Ogden McGraw Hill Education (India) Private Limited - Open University Press.

Reference Books:

1. **Health Psychology (Second edition)** by Charles Abraham, Mark Conner, Fiona Jones and Daryl O'Connor – Published by Routledge 711 Third Avenue, New York, NY 10017.
2. **HEALTH PSYCHOLOGY (Ninth Edition)** by SHELLEY E. TAYLOR - University of California, Los Angeles, McGraw Hill Education (India) Private Limited - Open University Press.
3. **SWAYAM / NPTL/ MOOCS/ We blinks/ Internet sources/ YouTube videos** and other materials / notes.
4. **Scientific Foundations of Health (Health & Welness) - General Books** published for university and colleges references by popular authors and published by the reputed publisher.

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
- ✓ Organising Group wise discussions Connecting to placement activities
- ✓ Quizzes and Discussions, Seminars and assignments

COs and POs mapping

Course Outcomes	Program Outcomes													
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12		
CO1	3													
CO2	3													
CO3	3													
CO4	3								2	2		2		
CO5	3													

Department of Humanities and Social Sciences Choice Based Credit System (CBCS) SEMESTER –II			
Professional Writing skills in English (1:0:0) 1 (Common to all Branches) (Effective from the academic year 2023-2024)			
Course Code	BPWSK206	CIE Marks	50
Teaching Hours/Week (L: T:P)	1:0:0	SEE Marks	50
Total Number of Lecture Hours	15	Exam Hours	01

Course objectives: This course will enable students to

1. Identify the Common Errors in Writing and Speaking English.
2. Improve their technical writing and Presentation skills for employment.
3. Acquire Employment and Workplace communication skills.
4. Learn about Techniques of Information Transfer through presentation in different level.

Module – 1
Preamble: Importance of English grammar, Vocabulary and Communication skills enhancing the employability skills of Engineering graduates. **Identifying Common Errors in Spoken and Written English:** Common Errors identification in Parts of Speech, Use of Verbs and Phrasal Verbs, Auxiliary Verbs and their forms, Subject Verb Agreement (identification of common errors), Words Confused\Misused, Error identification in Sequence of Tenses. **3 hours**

Module – 2
Nature and Style of Sensible Writing: Organizing Principles of Paragraphs in Documents, Writing Introduction and Conclusion, Importance of proper Punctuation, Precise Writing, Techniques in Essay Writing, Sentence agreements and correction activities, Misplaced Modifiers, Word order, Errors due to the confusion of words. **3hours**

Module – 3
Practises of Technical Reading and Writing: Introduction to Technical Writing Process, Report Writing, Significance of Reports, Types of Reports. Introduction to Technical Proposal Writings, Types and characteristics. Scientific Writing Process. Grammar- Voices and Reported Speech, Spotting errors and Sentence Improvement. Cloze test and Theme Detection-Exercises. **3 hours**

Module -4
Professional Communication for Employment: Listening comprehension, Types of Listening, Listening Barriers, Improving Listening Skills. Reading Comprehension, Tips for Effective Reading, Job Applications, Types of Official\employment\business Letters, Bio-Data vs Resume, Profile, CV writing, Emails, Blog writing and Memos. **3 hours**

Module – 5
Professional communication at Workplace: Group Discission and Professional Interviews, Intra and interpersonal Communication Skills at Workplace, Non-Verbal Communication Skills and its importance in GD and Interview, Presentation skills and formal Presentations by Students, Strategies of Presentation skills. **3 hours**

Course outcomes: The students will be able to:
1. Understand and identify the Common Errors in Writing and Speaking.
2. Enhance Technical writing and Presentation skills.
3. Exhibit Employment and Workplace communication skills.
4. Analyse and apply various Techniques of Information Transfer through presentation in different levels

Textbooks
1. "Professional Writing Skills in English" published by Fillip Learning – Education (ILS), Bangalore – 2022.
2. "Functional English" (As per AICTE 2018 Model Curriculum) (ISBN-978-93-5350-047-4) Cengage learning India Pvt Limited [Latest Edition 2019]

References
1. Gajendra Singh Chauhan, Technical Communication, Cengage Learning India Pvt Limited, Latest Revised Edition, 2019
2. N.P. Sudharshana and C. Savitha, English for Engineers, Cambridge University Press ,2018.
Meenakshi Raman and Sangeetha Sharma, Technical Communication – Principles and Practice, Oxford University Press, Third Edition 2017.

CONTINUOUS INTERNAL EVALUATION (CIE)

- There are 25 marks for the CIE's Assignment component and 25 for the Internal Assessment Test component.
- **Of the total test marks, the question paper should have 25% multiple choice questions and 75% descriptive questions**.
- Each test shall be conducted for 40 marks. The first test will be administrated after 40- 50% of the coverage of the syllabus, and the second test will be administrated after 85 - 90% of the coverage of the syllabus.
- The average of the two tests shall be scaled down to 25 marks.
- Two CCAs shall be conducted for 25 marks each. The sum of the two CCAs shall be scaled down to 25 marks.
- The final CIE marks of the course out of 50 will be the sum of the scale-down marks of tests and CCAs marks.

SEMESTER END EXAMINATIONS (SEE)

- SEE Paper shall be set for 50 questions, each of the 01 marks. The pattern of the question paper is MCQ (Multiple choice questions). The time allotted for SEE is 01 hour. The student has to secure a minimum of 35% of the maximum marks meant SEE.

Department of Humanities and Social Sciences			
Choice Based Credit System (CBCS)			
SEMESTER – I/II			
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ **Samskrutika Kannada (1:0:0):1**			
(Effective from the academic year 2022-2023)			
ವಿಷಯ ಸಂಕೇತ Course Code	BKSKK107/207	ನಿರಂತರ ಆಂತರಿಕ ಮೌಲ್ಯಮಾಪನದ ಅಂಕಗಳು CIE Marks	**50**
ಒಂದು ವಾರಕ್ಕೆ ಬೋಧನಾ ಅವಧಿ Teaching hours/Week (L: T:P)	**1:0:0**	ಸೆಮಿಸ್ಟರ್ ಅಂತ್ಯದ ಪರೀಕ್ಷೆಯ ಅಂಕಗಳು SEE Marks	**50**
ಒಟ್ಟು ಬೋಧನಾ ಅವಧಿ Total Number of contact hours	**15**	ಪರೀಕ್ಷೆಯ ಅವಧಿ Exam Hours	**01**

Course Objectivies: ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು:

1. ಪದವಿ ವಿದ್ಯಾರ್ಥಿಗಳಾಗಿರುವುದರಿಂದ ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಪ್ರಧಾನ ಭಾಗವಾದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.

3. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಮೂಡಿಸುವುದು.

4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯವನ್ನು ಹಾಗೂ ಅವರುಗಳು ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ಪರಿಚಯಿಸುವುದು.

5. ಸಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

ಘಟಕ–1

ಕನ್ನಡ ಸಂಸ್ಕೃತಿ ಮತ್ತು ಭಾಷೆ ಕುರಿತಾದ ಲೇಖನಗಳು:

ಕರ್ನಾಟ ಸಂಸ್ಕೃತಿ – ಹಂಪ ನಾಗರಜಯ್ಯ

ಕರ್ನಾಟಕ ಏಕೀಕರಣ: ಒಂದು ಅಪೂರ್ವ ಚರಿತ್ರೆ–ಜಿ. ವೆಂಕಟಸುಬ್ಬಯ್ಯ

ಆಡಳಿತ ಭಾಷೆಯಾಗಿ ಕನ್ನಡ–ಡಾ.ಎಲ್.ತಿಮ್ಮೇಶ ಮತ್ತು ಪ್ರೊ.ವಿ.ಕೇಶವಮೂರ್ತಿ   **3 ಗಂಟೆಗಳು**

ಘಟಕ–2

ಆಧುನಿಕ ಪೂರ್ವದ ಕಾವ್ಯ ಭಾಗ:

ವಚನಗಳು–ಬಸವಣ್ಣ, ಅಕ್ಕಮಹಾದೇವಿ, ಆಯ್ದಕ್ಕಿ ಮಾರಯ್ಯ, ಜೇಡರದಾಸಿಮಯ್ಯ, ಆಯ್ದಕ್ಕಿ ಲಕ್ಕಮ್ಮ

ಕೀರ್ತನೆಗಳು–ಅದರಿಂದೇನು ಫಲ ಇದರಿಂದೇನು ಫಲ–ಪುರಂದರದಾಸರು ತಲ್ಲಣಿಸದಿರು ಕಂಡ್ಯ ತಾಳು ಮನವೇ–ಕನಕದಾಸರು

ತತ್ವಪದಗಳು: ಸಾವಿರ ಕೊಡಗಳ ಸುಟ್ಟು – ಶಿಶುನಾಳ ಶರೀಫ   **3 ಗಂಟೆಗಳು**

ಘಟಕ–3

ಆಧುನಿಕ ಕಾವ್ಯ ಭಾಗ:	
ಡಿ.ವಿ.ಜಿ.ಯವರ ಮಂಕು ತಿಮ್ಮನ ಕಗ್ಗದಿಂದ ಆಯ್ದ ಕೆಲವು ಭಾಗಗಳು.	
ಕುರುಡು ಕಾಂಚಾಣ: ದಾ. ರಾ. ಬೇಂದ್ರೆ	
ಹೊಸ ಬಾಳಿನ ಗೀತೆ: ಕುವೆಂಪು	**3 ಗಂಟೆಗಳು**
ಘಟಕ–4	
ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ:	
ಡಾ.ಸರ್.ಎಂ.ವಿಶ್ವೇಶ್ವರಯ್ಯ:ವ್ಯಕ್ತಿ ಮತ್ತು ಐತಿಹ್ಯ–ಎ.ಎನ್.ಮೂರ್ತಿರಾವ್	
ಕರಕುಶಲ ಕಲೆಗಳು ಮತ್ತು ಪರಂಪರೆಯ ವಿಜ್ಞಾನ–ಕರೀಗೌಡ ಬೀಚನಹಳ್ಳಿ	**3 ಗಂಟೆಗಳು**
ಘಟಕ–5	
ಸಂಸ್ಕೃತಿಕ, ಜನಪದ ಕಥೆ ಮತ್ತು ಪ್ರವಾಸ ಕಥನ:	
ಯುಗಾದಿ : ವಸುಧೇಂದ್ರ	
ಮೆಗಾನೆ ಎಂಬ ಗಿರಿಜನ ಪರ್ವತ: ಹಿ.ಚಿ.ಬೋರಲಿಂಗಯ್ಯ	**3 ಗಂಟೆಗಳು**

Course outcome (course skills set)

ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ (BKSKK107/207) ಪಠ್ಯ ಕಲಿಕೆಯ ನಂತರ ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ:

1. ಕನ್ನಡ ಭಾಷೆ, ಸಾಹಿತ್ಯ ಮತ್ತು ಕನ್ನಡದ ಸಂಸ್ಕೃತಿಯ ಕುರಿತು ಅರಿವು ಮೂಡಿರುತ್ತದೆ.
2. ಕನ್ನಡ ಸಾಹಿತ್ಯದ ಆಧುನಿಕ ಪೂರ್ವ ಮತ್ತು ಆಧುನಿಕ ಕಾವ್ಯಗಳನ್ನು ಸಾಂಕೇತಿಕವಾಗಿ ಕುರಿತು ಹೆಚ್ಚಿನ ಓದಿಗೆ ಮತ್ತು ಜ್ಞಾನಕ್ಕೆ ಸ್ಫೂರ್ತಿ ಮೂಡುತ್ತದೆ.
3. ವಿದ್ಯಾರ್ಥಿಗಳಲ್ಲಿ ಸಾಹಿತ್ಯತ ಮತ್ತು ಸಂಸ್ಕೃತಿಯ ಬಗ್ಗೆಡೆ ಅರಿವು ಹಾಗೂ ಆಸಕ್ತಿಯನ್ನು ಹೆಚ್ಚಾಗುತ್ತದೆ.
4. ತಾಂತ್ರಿಕ ವ್ಯಕ್ತಿಗಳ ಪರಿಚಯ ಹಾಗೂ ಅವರುಗಳ ಸಾಧಿಸಿದ ವಿಷಯಗಳನ್ನು ತಿಳಿದುಕೊಂಡು ನಾಡಿನ ಇನ್ನಿತರ ವ್ಯಕ್ತಿಗಳ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳಲು ಕೌತುಕತೆ ಹೆಚ್ಚಾಗುತ್ತದೆ.
5. ಸಾಂಸ್ಕೃತಿಕ, ಜನಪದ ಹಾಗೂ ಪ್ರವಾಸ ಕಥನಗಳ ಪರಿಚಯ ಮಾಡಿಕೊಡುವುದು.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). The minimum passing mark for the SEE is 35% of the maximum marks (18 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

 Continuous Internal Evaluation (CIE):

Two Unit Tests each of 30 Marks (duration 01 hour)

• First test after the completion of 30-40 % of the syllabus

 • Second test after completion of 80-90% of the syllabus

One Improvement test before the closing of the academic term may be conducted if necessary. However best two tests out of three shall be taken into consideration

Two assignments each of 20 Marks

The teacher has to plan the assignments and get them completed by the students well before the closing of the term so that marks entry in the examination portal shall be done in time. Formative (Successive) Assessments include Assignments/Quizzes/Seminars/ Course projects/Field surveys/ Case studies/ Hands-on practice (experiments)/Group Discussions/ others. The Teachers shall choose the types of assignments depending on the requirement of the course and plan to attain the Cos and Pos (to have a less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course). CIE methods /test question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

The sum of two tests, two assignments, will be out of 100 marks and will be scaled down to 50 marks

Semester End Examinations (SEE)

SEE paper shall be set for **50 questions, each of the 01 mark**. The pattern of the **question paper is MCQ** (multiple choice questions). The time allotted for SEE is **01 hour**. The student must secure a minimum of 35% of the maximum marks for SEE

Textbook:
ಸಾಂಸ್ಕೃತಿಕ ಕನ್ನಡ
ಡಾ.ಹಿ.ಚಿ ಬೋರಲಿಂಗಯ್ಯ ಮತ್ತು ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ,
ಪ್ರಸಾರಾಂಗ ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

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Department of Humanities and Social Sciences
Choice Based Credit System (CBCS)
SEMESTER – I/II

ಬಳಕೆ ಕನ್ನಡ **Balake Kannada (Kannada for Usage) (1:0:0):1**

(Common to all Branches)
(Effective from the academic year 2022-2023)

Course Code	BKBKK107/207	CIE Marks	50
Teaching Hours/Week (L: T:P)	1:0:0	SEE Marks	50
Total Number of Lecture Hours	15	Exam Hours	01

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯ ಉದ್ದೇಶಗಳು (**Course Learning Objectives**):

- **To Create awareness regarding the necessity of learning local language for comfortable and healthy life.**
- **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.**

Module – 1
Introduction, Necessity of learning a local language. Methods to learn the Kannada language. Easy learning of a Kannada Language: A few tips. Hints for correct and polite conversation, Listening and Speaking Activities.Key to Transcription.ವೈಯಕ್ತಿಕ, ಸ್ವಾಮ್ಯಸೂಚಕ/ಸಂಬಂಧಿತ ಸರ್ವನಾಮಗಳು ಮತ್ತು ಪ್ರಶ್ನಾರ್ಥಕ ಪದಗಳು. Personal Pronouns, Possessive Forms, Interrogative words. **3 hours**

Module – 2
ನಾಮಪದಗಳ ಸಂಬಂಧಾರ್ಥಕ ರೂಪಗಳು, ಸಂದೇಹಾಸ್ಪದ ಪ್ರಶ್ನೆಗಳು ಮತ್ತು ಸಂಬಂಧವಾಚಕ ನಾಮಪದಗಳು Possessive forms of of nouns, dubitive question and Relative noun. ಗುಣ, ಪರಿಮಾಣ ಮತ್ತು ವರ್ಣಬಣ್ಣ ವಿಶೇಷಣಗಳು, ಸಂಖ್ಯಾವಾಚಕಗಳು Qualitative, Quantitative and Colour Adjectives, Numerals. ಕಾರಕ ರೂಪಗಳು ಮತ್ತು ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು – ಸಪ್ತಮಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯ (ಅ, ಅದು, ಅವು, ಅಲ್ಲಿ) Predictive Forms, Locative Case. **3 hours**

Module – 3
ಚತುರ್ಥಿ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯದ ಬಳಕೆ ಮತ್ತು ಸಂಖ್ಯಾವಾಚಕಗಳು Dative cases and Numerals. ಸಂಖ್ಯಾಗುಣವಾಚಕಗಳು ಮತ್ತು ಬಹುವಚನ ನಾಮರೂಪಗಳು Ordinal numerals and Plural makers. ನ್ಯೂನ/ನಿಷೇದಾರ್ಥಕ ಕ್ರಿಯಾಪದಗಳು ವ ೇತ್ತು ವರ್ಣ ಗುಣವಾಚಕಗಳು Defective /Negative Verbs and Colour Adjectives. **3 hours**

Module – 4
ಅಪ್ಪಣೆ/ಒಪ್ಪಿಗೆ, ನಿರ್ದೇಶನ, ಪ್ರೋತ್ಸಾಹ ಮತ್ತು ಒತ್ತಾಯ ಅರ್ಥರೂಪ ಪದಗಳು ಮತ್ತು ವಾಕ್ಯಗಳು Permission, Commands, encouraging and urging words (Imperative words and sentences). ಸಾಮಾನ್ಯ ಸಂಭಾಷಣೆಗಳಲ್ಲಿ ದ್ವಿತೀಯ ವಿಭಕ್ತಿ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ಸಂಭವನೀಯ ಪ್ರಕಾರಗಳು Accusative Cases and Potential Forms used in General Communication. "ಇರು ಮತ್ತು ಇರಲ್ಲ" ಸಹಾಯಕ ಕ್ರಿಯಾಪದಗಳು, ಸಂಭಾವ್ಯಸೂಚಕ ಮತ್ತು ನಿಷೇಧಾರ್ಥಕ ಕ್ರಿಯಾ ಪದಗಳು Helping verbs "iru and iralla" Corresponding Future and Negation Verbs. ಹೋಲಿಕೆ (ತರತಮ), ಸಂಬಂಧಸೂಚಕ ಮತ್ತು ವಸ್ತು ಸೂಚಕ ಪ್ರತ್ಯಯಗಳು ಮತ್ತು ನಿಷೇದಾರ್ಥಕ ಪದಗಳ ಬಳಕೆ Comparitive, Relationship, Identification and Negation words. **3 hours**

Module – 5
ಕಾಲ ಮತ್ತು ಸಮಯದ ಹಾಗೂ ಕ್ರಿಯಾ ಪದಗಳ ವಿವಿಧ ಪ್ರಕಾರಗಳು, Different types of tense, time and verbs. 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. ಕರ್ನಾಟಕ ರಾಜ್ಯ ಮತ್ತು

ರಾಜ್ಯದ ಬಗ್ಗೆ ಕುರಿತಾದ ಇತರೆ ಮಾಹಿತಿಗಳು Karnataka state and general information about the state. ಕನ್ನಡ ಭಾಷೆ ಮತ್ತು ಸಾಹಿತ್ಯ Kannada Language and Literature. ಭಾಷೆ ಕಲಿಯಲು ಏನನ್ನು ಮಾಡಬೇಕು ಮತ್ತು ಮಾಡಬಾರದು Do's and Dont's in Learning a Language **3 hours**

ಬಳಕೆ ಕನ್ನಡ ಪಠ್ಯ ಕಲಿಕೆಯಿಂದ ವಿದ್ಯಾರ್ಥಿಗಳಿಗೆ ಆಗುವ ಅನುಕೂಲಗಳು ಮತ್ತು ಫಲಿತಾಂಶಗಳು: Course outcomes:

At the end of the Course, The Students will be able to

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

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). The minimum passing mark for the SEE is 35% of the maximum marks (18 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation (CIE):

Two Unit Tests each of 30 Marks (duration 01 hour)

• First test after the completion of 30-40 % of the syllabus

• Second test after completion of 80-90% of the syllabus

One Improvement test before the closing of the academic term may be conducted if necessary. However best two tests out of three shall be taken into consideration

Two assignments each of 20 Marks

The teacher has to plan the assignments and get them completed by the students well before the closing of the term so that marks entry in the examination portal shall be done in time. Formative (Successive) Assessments include Assignments/Quizzes/Seminars/ Course projects/Field surveys/ Case studies/ Hands-on practice (experiments)/Group Discussions/ others. The Teachers shall choose the types of assignments depending on the requirement of the course and plan to attain the Cos and Pos (to have a less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course). CIE methods /test question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

The sum of two tests, two assignments, will be out of 100 marks and will be scaled down to 50 marks

Semester End Examinations (SEE)

SEE paper shall be set for **50 questions, each of the 01 mark**. The pattern of the **question paper is MCQ** (multiple choice questions). The time allotted for SEE is **01 hour**. The student must secure a minimum of 35% of the maximum marks for SEE

Textbook:

ಬಳಕೆ ಕನ್ನಡ
ಲೇಖಕರು: ಡಾ. ಎಲ್. ತಿಮ್ಮೇಶ
ಪ್ರಸಾರಾಂಗ, ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

All Engineering Departments			
Choice Based Credit System (CBCS)			
SEMESTER - I/II			

Innovation and Design Thinking (0:2:0)1			
(Common to all Branches)			
(Effective from the academic year 2022 -2023)			

Course Code	BIDTK158/258	CIE Marks	50
Teaching Hours/Week (L:T:P)	0:2:0	SEE Marks	50
Total Number of Lecture Hours	26	Exam. Hours	01

Course objectives:

This course will enable students to:
1. Demonstrate the fundamental concept of design thinking for product and service development.
2. Illustrate empathetic design for potential customers.
3. Develop and examine the problem solving techniques for innovative products and services.
4. Demonstrate the fundamental concept of innovation for product and service development.
5. To discuss the methods of implementing design thinking in the real world.

Module – 1

Introduction to Design Thinking: Introduction, Importance of design thinking, what is design thinking**:** principles of design thinking, the process of design thinking**,** double-diamond model. The Philosophy of Design thinking, rules of design thinking.

Frame work of Design Thinking: Aesthetics and creativity as design thinking mechanisms, Psychological and neural bases of creativity, a definition and framework of design thinking.

How to understand the problem: How to analyse problems, Search field determination.

Understanding of the problem: The blind spot of knowledge and awareness, Problem analysis: PESTEL-Analysis. Case studies on PESTEL-Analysis.   (5 Hours)

Module – 2

How to Observe: Observation Phase, Empathetic design, Tips for observing, Method for Empathetic Design: Behavioural Mapping and Tracking, Empathy Map, Heuristic Evaluation, Customer Journey**.**

How to Define the Problem: Point-of-view phase, Characteristics of target group, Persona, Jobs-to-be done, Means-end approach.

Ideate Phase: The creative process, success factor for creative process. brainstorming: rules and tips for brain storming, mind mapping, rules for mind mapping, synectics.

Case studies on Empathetic design.   (5 Hours)

Module – 3

Evaluation of ideas: Checklists/Proc-Cons lists, assessment areas of innovations, PPCO method, SWOT analysis for ideas, theory of inventive problem solving(TRIZ), principle of evolution,

innovation checklist, resource analysis.

Real-Time Design Interaction: Introduction, improving design process instrumentation, real-time design research instrument.

Collaboration in digital space: Creativity across distances, analysing design thinking working modes, evaluating existing tool for remote collaboration and digital whiteboard.

Case studies on SWOT analysis.   (5 Hours)

Module – 4

Innovation Process: Model Unified innovation process model for engineering designers and managers, Feedback pathways and gates: designer and reviewer initiated.

Strategic innovations: Design thinking approach: - Growth, predictability, strategic foresight, change, sense making, value redefinition, extreme competition, experience design standardization, creative culture, rapid prototyping, strategy and organization and business model design.

Innovation Culture*: Nested view of design thinking and practice, national culture and design practice, method, Insights: culture and design, methodological insights.

Case study on business model design   (5 Hours)

Module – 5

Prototype and Testing: Prototype phase, storyboarding, storytelling, test phase, tips for prototype testing, tips for interviews, tips for survey, requirements for space and materials, Agility for design thinking, the Scrum guide, how to conduct workshop, MVP and prototyping.

Efficacy of prototyping*: The efficacy of prototyping under time constraints, introduction, method, materials and design task, participants, procedure, results, participant creations. interviews.

Business process modelling: Introduction, process models mediate communication, research question and iterating ideas. Case studies on prototyping and testing

                                                                                                                    (5 Hours)

Course Outcomes: The students will be able to:
1. Demonstrate the concept of Design thinking for real world problems.
2. Illustrate empathy, define and ideate for design thinking problems.
3: Describe evaluation of ideas, design interaction and collaborations.
4. Discuss innovation process & culture and strategic innovations.
5. Illustrate prototyping , testing and business process modelling.

Assessment Methods

CIE Components (50 Marks)

Two Unit Tests each of 40 Marks (Duration 01 hour)

Internal Assessments Tests (Two Tests X 40Marks)   : 80 Marks

Assignment (AAT-1)   : 25 Marks

Course project(AAT-2)   : 25 Marks

Sum of the Assignment and Course project marks will be out of 50 Marks and scaled down to 25 Marks

Sum of the two Internal Assessments Tests Marks will be out of 80 Marks and scaled down to 25 Marks

i.e. Internal Assessments Tests   :25 Marks

Assignment(AAT-1) and Course project(AAT-2)   : 25 Marks

Total CIE Marks   : 50 Marks

Semester-End Examination

- SEE question paper will be set for 50 questions of each of 01 marks
- The pattern of the question paper is MCQ.

Assessment Details (both CIE and SEE):

- The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%.
- The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50).
- The minimum passing mark for the SEE is 35% of the maximum marks (18 marks out of 50).
- A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination(SEE), if the student secures not less than 40% (20 Marks out of 50) in the Continuous Internal Evaluation (CIE) and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Textbooks:

1. Christian Mueller-Roterberg, Handbook of Design Thinking, Tips & Tools for how to design thinking, Kindle Direct Publishing, 2018.
2. A Nil Hasso Plattner, Christoph Meinel and Larry Leifer, Design Thinking: Understand – Improve – Apply, Springer, 2011.

References:

3. Idris Mootee, Design Thinking for Strategic Innovation: What They Can't Teach You at Business or Design School, John Wiley & Sons 2013.
4. Jeanne Liedtka , Andrew King , Kevin Bennett, Solving Problems with Design Thinking - Ten Stories of What Works ,Columbia Business School Publishing, 2013.
5. Gavin Ambrose Paul Harris, Basics of Design Thinking, AVA Publishing, Switzerland, 2009.

Web links and Video Lectures (e-Resources):

1. www.tutor2u.net/business/presentations/. /productlifecycle/default.html
2. https://docs.oracle.com/cd/E11108_02/otn/pdf/. /E11087_01.pdf
3. www.bizfilings.com › Home › Marketing › Product Development
4. https://www.mindtools.com/brainstm.html
5. https://www.quicksprout.com/. /how-to-reverse-engineer-your-competit

6. www.vertabelo.com/blog/documentation/reverse-engineering

6. https://support.microsoft.com/en-us/kb/273814

7. https://support.google.com/docs/answer/179740?hl=en

8. https://www.youtube.com/watch?v=2mjSDIBaUlM

7. thevirtualinstructor.com/foreshortening.html

8. https://dschool.stanford.edu/.../designresources/.../ModeGuideBOOTCAMP2010L.pdf

9. https://dschool.stanford.edu/use-our-methods/ 6. https://www.interactiondesign.org/literature/article/5-stages-in-the-design-thinking-process

10. http://www.creativityatwork.com/design-thinking-strategy-for-innovation/ 49 8.

11. https://www.nngroup.com/articles/design-thinking/ 9.

12. https://designthinkingforeducators.com/design-thinking/ 10.

13. www.designthinkingformobility.org/wp-content/.../10/NapkinPitch_Worksheet.pdf

14. NPTL : Design Thinking - A Primer - Course (nptel.ac.in)

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

http://dschool.stanford.edu/dgift/

SEMESTER I/II

SKILL LAB (0:0:1) 1			
Course Code	BSLK108/208	**CIE Marks**	50
Teaching Hours/Week (L:T:P)	0:0:2	**SEE Marks**	50
Total Number of Contact Hours	26	**Exam Hours**	-

Objectives:

The main objective of this course is to develop basic skill sets that needed to perform in our day to day life using engineering knowledge and tools. The detail objectives are as follows.

1. To facilitate the students to understand commonly used materials and tools in day to day life of Engineering.
2. To prepare the students to understand and prepare basic connections and drawings related to the branches of Engineering.
3. To provide practical hands-on training on connections, constructions and testing in the field of Engineering.
4. To make the students to understand the basic safety aspects and devices that are commonly used in the field of Engineering.

CIVIL ENGINEERING

Individual Experiment

1. Study of Common Building Materials in Construction.

(Cement, Fine Aggregate, Coarse Aggregates, bricks, solid blocks, tiles, wood, paints, steel).

2. 1BHK Plan, section and Elevations.

Group Experiment

3. Calculate the Compressive strength of Bricks / Blocks and water absorption

4. Calculate the Volume of Bricks / Blocks in a wall

5. Demonstration: a) English Bond b) Flemish Bond c) Construction tools d) Fire Safety devices

MECHANICAL ENGINEERING

Individual Experiments

1. Joint preparation for CPVC pipes/ PVC pipes.
2. Measurement of height, diameter and pitch using different measuring instruments.

   Group Experiments:

3. Assembly/disassembly of bicycle.
4. Preparation of holes and joints on metals and non-metals using power tools.

   Demonstration:

5. Demonstration of a) Assembly and disassembly of pump b) Metals, non-metals and advanced materials.

ELECTRICAL AND ELECTRONICS ENGINEERING

1. Trouble-shooting of Main distribution board (Lighting and AEH) Electrical/Electronic chokes of fluorescent lamp/circuit

2. Testing of Continuity in switches (MCBs, Fuses etc), windings and wires using Test Lamp/Multimeter and Cable Insulation testing using Megger.

3. Testing and replacement of switches, sockets and fuses.

4. Wiring and Connection of UPS.

5. Trouble shooting of ceiling fan and sump motor and its wiring.

ELECTRONICS AND COMMUNICATIONS ENGINEERING AND ELECTRONICS AND TELECOMMUNITAION ENGINEERING

1. Hands-on soldering and De-soldering techniques.

2. To study about different types of resistors and its colour coding and also to perform the wiring & testing of total resistance in the series combination & parallel combination of resistors on bread board set-up.

3. To study the different types of capacitors and understand the different types of colour coding schemes.

4. To study about inductor & its types.

5. To generate signals and measure various circuit Parameters on an oscilloscope.

COMPUTER SCIENCE AND ENGINEERING

1. Computer basics: introduction, front panel, back panel, inside CPU, assembling, disassembling of computer and troubleshooting.

2. Software basics, types of software, installation demo of OS.

3. Networking basics, introduction to networking tools such as routers, switches, hubs, hands-on.

4. Introduction to networking tools such as crimpling tools, testing and making networking cable and setting up a networking and sharing files.

Outcomes:

1. Students will be able to understand the basic materials and tools that are commonly used in day to day life of Engineering.

2. Students will be able to acquire basic skill sets of preparing connections, drawings, testing and construction that are commonly used in day to day life of Engineering.

3. Students will be able to demonstrate practically the acquired skill sets in constructions, testing and trouble shooting in day to day life of Engineering.

4. Students will be able to acquire the basic knowledge of tools and procedure that are commonly used in safety aspects of Engineering.

SKILL LAB (BSLK 108) ASSESSMENT for the AY 2023-24 Odd Semester

Student Name: USN:

Department: Section:

PART I: Assessment is based on the conduction of the experiments by the students and Record submission in the 5 skill domains in the departments				Total Marks (75) (A+B+C+D+E)
Department: Mechanical Engineering **Name and Signature of the faculty:**				
	Max Marks	Awarded Marks	A - Average Marks	
Session 1 Experiments	15			
Session 2 Experiments	15			
Department: Computer Science Engineering / ISE / AIML **Name and Signature of the faculty:**				
	Max Marks	Awarded Marks	B - Average Marks	
Session 1 Experiments	15			
Session 2 Experiments	15			
Department: Electrical & Electronics Engineering **Name and Signature of the faculty:**				
	Max Marks	Awarded Marks	C- Average Marks	
Session 1 Experiments	15			
Session 2 Experiments	15			
Department: Electronics and Communication Engineering and Electronics and Telecommunications Engineering **Name and Signature of the faculty:**				
	Max Marks	Awarded Marks	D- Average Marks	
Session 1 Experiments	15			
Session 2 Experiments	15			
Department: Civil Engineering **Name and Signature of the faculty:**				
	Max Marks	Awarded Marks	E-Average Marks	
Session 1 Experiments	15			
Session 2 Experiments	15			

**15 marks can be divided as Record Writeup:05 marks and Conduction:10 marks

Part II: Assessment is based on the Internal Assessment conducted at the end of the semester			
	Max Marks	Awarded Marks	Average IA Marks (25)
Experiment – I	25		
Experiment – II	25		

FINAL SKILL LAB MARKS		
	Max Marks	Awarded Marks
Part I Marks	75	
Part II Marks	25	
Final IA marks (Part I + Part II)	**100**	