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 2022-23)

II Semester (Electrical & Electronics Engineering Stream)   **Dept EEE**   **(For the students who attended 1st semester under Physics Group)**

Sl. No	Course and Course Code		Course Title	TD/PSB	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 for EES-II	Maths	2	2	2	0	03	50	50	100	04
2	#ASC(IC)	BCHEE202	Chemistry for EES	Chemistry	2	2	2	0	03	50	50	100	04
3	ESC	BCEDK203	Computer-Aided Engineering Drawing	Civil/Mech Engg dept	2	0	2	0	03	50	50	100	03
4	ESC-II	BESCK204C	Introduction to Electronics Engineering	Respective Engg Dept	3	0	0	0	03	50	50	100	03
5	PLC-II	BPLCK205D	Introduction to C++ Programming	Any Dept	2	0	2	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	HSMS	BICOK207	Indian Constitution	Humanities	1	0	0	0	01	50	50	100	01
8	HSMS	BSFHK258	Scientific Foundations of Health	Any Dept.	1	0	0	0	01	50	50	100	01
			TOTAL		14	4	8	0	18	400	400	800	20

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.**

#-BCHEE202- 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		L	T	P	(ETC-II) Emerging Technology Courses-II		L	T	P
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 Engineering	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, BESCK202-Introduction to Electrical Engineering and ECE/ETC/BM/ML** studentsshall opt any one of the courses from ESC-I **except BESCK203 Introduction to Electronics** Engineering
- 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

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II Semester

Course Title:	**Mathematics for EES - II**			
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	Exam Hours	03
Total Hours of Pedagogy		40 hours Theory + 10-12 Lab slots	Credits	04

Course objectives: The goal of the course **Mathematics for EES - II** (**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

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 CHEMISTRY			
Choice Based Credit System (CBCS)			
SEMESTER – II			
Engineering Chemistry (2:2:2) 4			
ECE Stream			
(Effective from the academic year 2022-23)			
Course Title	Chemistry for ECE, ETE and EEE Stream		
Course Code	**BCHEE202**	CIE Marks	50
Teaching Hours/Week (L:T:P)	2:2:2	SEE Marks	50
Total Number of Contact Hours	40 hours theory + 10 hours lab	Exam Hours	3

Course Objectives:

This course will enable students to:

1. To identify various sustainable technologies in engineering applications.
2. To develop problem solving, critical thinking and analytical reasoning towards scientific problems.
3. To distinguish the use of smart materials for latest development in material research.
4. To appraise the significance of engineering chemistry for industrial and domestic applications.

Module – 1

Preamble: Relevance of chemistry in day today activities, Importance of materials in industrial, defence and research application and its economic implications. Influence of new materials for the technological development, study and use of environment friendly materials for healthier society.

Conversion of Energy and Storage devices:

Batteries- Introduction, components, classification of batteries – Primary, secondary and reserve batteries. Construction, working and applications of metal - air (Zn- air) battery and Li-ion Battery.

Fuel Cells: Introduction, difference between conventional cell and fuel cell, limitations & advantages. Construction & working of H_2-O_2 fuel cell. Construction, working and applications of solid oxide fuel cell.

Supercapacitors: Definition, classification and characteristics: Electrostatic Double Layer Capacitors, Pseudo Capacitors and Hybrid Capacitors.

Self- Study: Characteristics of a battery: cell potential, current, capacity, electricity storage density, energy efficiency, cycle life and shelf life. Solid state battery (Li-polymer battery), Na-ion battery and Mg-ion batteries.

(8 Hours)

Module – 2

Corrosion science and E-waste management:

Corrosion Science: Introduction to corrosion, Electrochemical theory of corrosion, Types of Corrosion: differential metal corrosion, differential aeration corrosion (waterline and pitting corrosion). Corrosion testing by weight loss method and numericals. Corrosion control: Cathodic protection- Sacrificial anode method and Impressed current method. Protective metal coatings – Cathodic and Anodic coatings- Galvanization and Anodization.

* NOTE: Wherever the contact hours are not sufficient, tutorial hours can be converted to theory hours.

E-waste Management: Introduction, sources, types and effects of e-waste on environment and human health. Methods of disposal, advantages of recycling, extraction of copper and gold from e-waste.

Self-study: Nature of metal, nature of corrosion product, ratio of anodic area to cathodic area, nature of environment (pH, temperature, conductivity). Technological importance of metal plating. Differences between electroplating and electroless plating.

(8 Hours)

Module – 3

Chemistry of electronic materials:

Conductors and Insulators: Introduction, principle with examples, semiconductors - synthesis of solar grade silicon using Union Carbide Method and its application in solar cells.

Polymers: Introduction, Molecular weight – Number average, weight average and numerical problems. Conducting polymers – synthesis, mechanism of conduction in poly-acetylene, applications.

PCB: Electroless plating – Introduction, principle of electroless plating – copper in the manufacture of double-sided PCB

Self-Study: Technological importance of metal finishing and distinction between electroplating and electroless plating.

(8 Hours)

Module – 4

Nanomaterials and Optoelectronic devices:

Nanomaterials: Introduction to Nanomaterials, classification and properties. Chemical synthesis of nanomaterials: top-down and bottom-up approach. Synthesis techniques: Sol-gel method, Chemical Vapour Deposition. Introduction, properties and applications – nanofibers and graphene.

Optoelectronic systems: Liquid crystals – Introduction, classification, properties and application in Liquid Crystal Displays (LCD's), properties and application in Organic light emitting diodes (OLED's), Quantum Light emitting diodes (QLED's).

Self- Study: Applications of nanomaterials in various industries. Perovskite material and its application in optoelectronic devices. (8 Hours)

Module – 5

Sensor based Analytical Techniques:

Electrode system: Introduction, types of electrodes. Construction and working of calomel electrode. Ion selective electrode – definition, construction and application of glass electrode. Determination of pH using glass electrode. Concentration cell – Definition, construction and numerical problems.

Sensors: Definition, broad classification of electrochemical sensors and its applications.

Analytical Techniques: Introduction, working principle and instrumentation: Calorimetric sensors – estimation of copper, Potentiometric sensors – estimation of iron, Conductometric sensors – estimation of mixture of acids.

Self-study: Electrochemical and bio-sensors applications.

(8 Hours)

* NOTE: Wherever the contact hours are not sufficient, tutorial hours can be converted to theory hours

Course outcomes:

The students will be able to:

   CO1: To identify various sustainable technologies in engineering applications.

   CO2: To develop problem solving, critical thinking and analytical reasoning towards scientific problems.

   CO3: To distinguish the use of engineering materials for latest development in material research

   CO4: Quantitative and qualitative analysis of materials by using different instruments.

PRACTICAL MODULE

A- *Demonstration (any two) offline/virtual*:

   A1. Synthesis of metal oxide nanoparticle.

   A2. Estimation of sulphate using precipitation method.

   A3. Estimation of hardness of water by EDTA method.

   A4. Determination of COD of waste water sample.

B- *Exercise (compulsorily any 3 to be conducted)*:

   B1. Conductometric estimation of acid mixture.

   B2. Potentiometric estimation of FAS using $K_2Cr_2O_7$.

   B3. Determination of pK_a of vinegar using pH meter.

   B4. Determination of rate of corrosion of mild steel by weight loss method.

C- *Structured Enquiry (compulsorily any 3 to be conducted)*:

   C1. Estimation of Copper present in electroplating effluent by colorimeter.

   C2. Determination of viscosity of oil sample by Ostwald's viscometer.

   C3. Determination of percentage of iron in steel using external indicator method.

   C4. Estimation of Fluoride content using SPADNS by colorimetric estimation.

D- *Open ended Experiments (any two)*:

   D1. Determination of percentage of CaO in cement.

   D2. Determination chloride content of water in Argentometry.

   D3. Analysis of mineral content and acidity of soil.

   D4. Determination of percentage of copper in Brass using redox titration.

Books:

1. Wiley Engineering Chemistry, Wiley India Pvt. Ltd. New Delhi, 2013- 2nd Edition.
2. Engineering Chemistry, Satyaprakash & Manisha Agrawal, Khanna Book Publishing, Delhi
3. A Text Book of Engg. Chemistry, Shashi Chawla, Dhanpat Rai & Co. (P) Ltd.
4. Essentials of Physical Chemistry, Bahl&Tuli, S.Chand Publishing
5. Applied Chemistry, Sunita Rattan, Kataria 5. Engineering Chemistry, Baskar, Wiley
6. Engineering Chemistry – I, D. Grour Krishana, Vikas Publishing
7. A Text book of Engineering Chemistry, SS Dara & Dr. SS Umare, S Chand & Company Ltd., 12th Edition, 2011.
8. A Text Book of Engineering Chemistry, R.V. Gadag and Nitthyananda Shetty, I.K. International Publishing house. 2nd Edition, 2016.
9. Text Book of Polymer Science, F.W. Billmeyer, John Wiley & Sons, 4th Edition, 1999.
10. Nanotechnology A Chemical Approach to Nanomaterials, G.A. Ozin & A.C. Arsenault, RSC Publishing, 2005.
11. Corrosion Engineering, M.G. Fontana, N.D. Greene, McGraw Hill Publications, New York, 3rd Edition, 1996.
12. Kirby W. Beard, Linden's Handbook of Batteries, Fifth Edition, McGraw Hill, 2019.
13. Takatoshi Tsujimura, OLED Display Fundamentals and Applications, Wiley–Blackwell , 2012
14. Max Lu, Francois Beguin, Elzbieta Frackowiak, Supercapacitors: Materials, Systems, and Applications, Wiley-VCH; 1st edition, 2013.
15. Dr. H. Panda, "Handbook on Electroplating with Manufacture of Electrochemicals", ASIA PACIFIC BUSINESS PRESS Inc., 2017.
16. National Research Council 1995. Expanding the Vision of Sensor Materials.
17. Washington, DC: The National Academies Press. https://doi.org/10.17226/4782.
18. Engineering Chemistry, Edited by Dr. Mahesh B and Dr. Roopashree B, Sunstar Publisher (2022) Bengaluru, ISBN 978-93-85155-70-3
19. High Performance Metallic Materials for Cost Sensitive Applications, F. H. Froes, et al. 2010
20. Instrumental Methods of Analysis, Dr. K. R. Mahadik and Dr. L. Sathiyanarayanan.
21. Polymer Science, V R Gowariker, 3rd Edition
22. Engineering Chemistry, P C Jain & Monica Jain, Dhanpat Rai Publication, 2015-16th Edition.
23. Nanostructured materials and nanotechnology, Hari Singh, Nalwa, academic press 2002- 1st Edition.
24. Nanotechnology Principles and Practices, Sulabha K Kulkarni, Capital Publishing Company, 2014-3rd Edition.
25. Principles of nanotechnology, Phanikumar, Scitech publications, 2010-2nd Edition.
26. Chemistry for Engineering Students, B. S. Jai Prakash, R. Venugopal, Sivakumaraiah & Pushpa Iyengar., Subash Publications, Bangalore.5th Edition, 2014
27. Chemistry of Engineering materials, Malini S, K S Anantha Raju, CBS publishers Pvt Ltd.,
28. Laboratory Manual Engg. Chemistry, Anupma Rajput, Dhanpat Rai & Co.

* NOTE: Wherever the contact hours are not sufficient, tutorial hours can be converted to theory hours.

Web links and Video Lectures (e-Resources):
- Electrochemistry: https://nptel.ac.in/downloads/122101001/
- Chemistry of materials: https://nptel.ac.in/courses/104/103/104103019/
- https://www.youtube.com/watch?v=faESCxAWR9k
- https://www.youtube.com/watch?v=TBqXMWaxZYM&list=PLyhmwFtznRhuz8L1bb3X-9IbHrDMjHWWh
- https://www.youtube.com/watch?v=j5Hml6KN4TI
- https://www.youtube.com/watch?v=X9GHBdyYcyo
- https://www.youtube.com/watch?v=1xWBPZnEJk8
- https://www.youtube.com/watch?v=wRAo-M8xBHM.

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

* NOTE: Wherever the contact hours are not sufficient, tutorial hours can be converted to theory hours.

DEPARTMENT OF MECHANICAL ENGINEERING			
Choice Based Credit System (CBCS)			
SEMESTER – II			
COMPUTER AIDED ENGINEERING DRAWING (2:0:2) 3			
B.E(Common to all branches)			
(Effective from the academic year 2022-23)			
Course Code	BCEDK203	CIE Marks	50
Teaching Hours/Week (L:T:P)	2: 0: 2	SEE Marks	50
Total Number of Contact Hours	40	Exam Hours	3

Course Objectives:

This course will enable students to:

1. Illustrate skills of visualizing points and lines to represent the same in two dimensions as per international standards, by manual and computational methods.
2. Apply orthographic projections of planes and simple three-dimensional objects.
3. Construct isometric projections of solids and development of lateral surfaces

Module – 1

Preamble: Importance of Engineering Drawing, Industrial /defence application, research in the field of ME, Impact of the course on societal and sustainable solutions.

Introduction to Engineering drawing

Drawing Instruments and their uses, relevant BIS conventions and standards. Lettering, line conventions, dimensioning, material conventions, and free hand practicing. Co-ordinate system and reference planes HP, VP, RPP & LPP of 2D/3D environment. Selection of drawing sheet size and scale. Commands and creation of Lines, coordinate points, axes, poly-lines, square, rectangle, polygons, splines, circles, ellipse, text, move, copy, off-set, mirror, rotate, trim, extend, break, chamfer, fillet, curves, constraints viz., tangency, parallelism, inclination and perpendicularity.

Orthographic Projections: Planes of projection.

Projections of points in all the four quadrants.

Projections of straight lines

True length and True inclinations of a line, Apparent length and apparent inclinations of a line. Projection of straight line inclined to both the planes

(8 Hours)

Module – 2

Projections of plane surfaces

Introduction to projection of plane surfaces, Projection of Triangular, Square, Rectangular, Pentagonal, Hexagonal and Circular planes inclined to horizontal and vertical planes.

(8 Hours)

Module – 3

Projections of solids

Introduction to projections of Solids, Projections of right regular Prisms, Pyramids, Cones, Tetrahedron and Hexahedron (cube) inclined to both the planes.

(12 Hours)

		Module – 4	

Isometric Projection

Introduction, Isometric scale, Isometric projection of simple plane figures, Isometricprojection of hexahedron (cube), right regular prisms, pyramids, cylinders, cones, Hemisphere and spheres. Isometric projection of combination of two solids.

Development of lateral surfaces

Development of lateral surfaces of right regular prisms, cylinders, pyramids and cones resting with base on HP only.

(8 Hours)

		Module – 5	

Application problems and Multidisciplinary exercises (CIE only)

Application of projection of lines, planes, solids; Problems on application of isometric projections and development of lateral surfaces.

Free hand sketching: True free hand, guided free hand, roads, buildings, utensils, handtools and furniture etc.

Graphs and charts: Column chart, Pie chart, Line chart, Gantt chart etc using Microsoft excel or suitable software.

(4 Hours)

Course Outcomes (COs):

The students will be able to:

CO1: Illustrate competence in orthographic projections of points and lines.

CO2: Apply the concepts of orthographic projections of planes and solids pertaining to industrial drawings.

CO3: Construct isometric drawings of objects and development of lateral surfaces.

Continuous Internal Evaluation (CIE)

- CIE shall be evaluated for max. marks of 100 and later the same shall be scaled-down to 50 marks as detailedbelow:
- CIE component should comprise of Continuous evaluation of Drawing work of students based on below detailed weightage.

Module	Max. Marks Weightage	Evaluation Weightage in marks	
		Computer display and print out (a)	Sketching (b)
Module 1	35	15	20
Module 2	35	15	20
Module 3	60	20	40
Module 4	70	30	40
	200	80	120 (Scaled down to 20 Marks)
Total		**80**	**20**
Module 5	10	5	5
Consideration of Class work		**Total of Modules 1 to 4 [(a) + (b)] = 100 marks will be scaled down to 20 Marks + 10 marks for AAT from Module 5 = 30 marks**	

- Two tests covering all the modules is to be conducted and evaluation to be based on SEE pattern, and average marks is to be scaled down to **20 Mark**s.

- The final CIE (50) = Class work marks (30) + Test marks (20)

Question paper pattern:
- Module 1 and Module 2 will have ONE question each. Student required to answer any ONE question.
- Module 3 will have TWO questions. Student required to answer any ONE question.
- Module 4 will have TWO questions. Student required to answer any ONE question.
- Module 5 is for understanding the application concepts and for practice using the necessary software. This module is not considered for SEE.

Scheme of Evaluation:
Each of the question will be distributed in to TWO segments. The first being **SKETCHING** to its actual scale in the sketch book followed by the second segment being **DRAFTING** using a relevant Graphics Software.

Q. No	Question Paper Pattern	Marks for SKETCHING	Marks for DRAFTING	TOTAL MARKS
1	Module 1 and Module 2	5	25	30
2	Module 3	10	30	40
3	Module 4	5	25	30
	Total	20	80	100

Textbooks:
1. K.R. Gopalakrishna, *Engineering Graphics*, 32nd ed. Bangalore: Subhas Publications, 2013.
2. N.D. Bhatt, *Engineering Drawing*, 48th ed. Gujarat: V. M. Panchal Charutha Publishing House, 2005.

References:
1. A Primer on Computer Aided Engineering Drawing, 2nd edition, Published by VTU, Belagavi.
2. Luzadder Warren J., Duff John M Eastern, 2009, Fundamentals of Engineering Drawing with an Introduction to Interactive Computer Graphics for Design and Production, 7th edition, Best Publications.
3. Parthasarathy N. S., Vela Murali, Engineering Drawing, Oxford University Press, 2015.

B.E ELECTRONICS AND COMMUNICATION ENGINEERING
Choice Based Credit System (CBCS)
SEMESTER – II

Introduction to Electronics Engineering (3:0:0) 3 **ESC – I** (Common to: CSE/ME/EEE/CIV/ISE/AIML) (Effective from the academic year 2022-23)			
Course Code	BESCK204C	CIE Marks	50
Teaching Hours/Week (L:T:P:S)	3:0:0	SEE Marks	50
Total Number of Contact Hours	40	Exam Hours	3

Course Objectives:

This course will enable students to:

1. To prepare students with fundamental knowledge/overview in the field of Electronics and Communication Engineering.
2. To equip students with a foundation in electronic engineering required for comprehending the operation and application of electronic circuits, logic design, embedded systems, and communication systems.
3. Professionalism & Learning Environment: To include in first-year engineering students an ethical and professional attitude by providing an academic environment inclusive of effective communication, teamwork, ability to relate engineering issues to a broader social context, and life-long learning needed for a successful professional career.

Teaching-Learning Process

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

1. Lecturer 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. Arrange visits to nearby PSUs such as BHEL, BEL, ISRO, etc., and small-scale hardware Industries to give brief information about the electronics manufacturing industry.
3. Show Video/animation films to explain the functioning of various analog and digital circuits.
4. Encourage collaborative (Group) Learning the class
5. Ask at least three HOTS (Higher-order Thinking) question 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 analyze information rather than simply recall it.
7. Topics will be introduced in multiple representations.
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 student's understanding.

Module – 1
Power Supplies: Block diagram, Half-wave rectifier, Full-wave rectifiers and filters, Voltageregulators, Ouput resistance and voltage regulation, Voltage multipliers.   Amplifiers: CE amplifier with and without feedback, Multi-stage amplifier, BJT as a switch, Cut-offand saturation modes. (Text 1)   (8 Hours)
Module – 2
Oscillators: Barkhausen criterion, sinusoidal and non-sinusoidal oscillators, Ladder network oscillators, Wein bridge oscillator, Multivibrtaors, Single-stage astable oscillator, Crystal controlled oscillator (Only Concepts ,working and waveforms. No mathematical derivations).   **Operational amplifiers:** Ideal op-amp: characteristics of ideal and practical op-amp; Practical op-amp circuits: Inverting and non -inverting amplifiers, voltage follower, summer, subtractor,integrator, differentiator. (Text 1)   (8 Hours)
Module – 3
Boolean Algebra and Logic Circuits: Binary numbers, Number Base Conversion octal & Hexa Decimal Numbers, Complements , Basic definitions, Axiomatic definition of Boolean algebra, BasicTheorems and properties of Boolean Algebra, Boolean Functions, Canonical and Standard Forms, other logic operations, Digital Logic Gates(Text2: 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7) **Combinational logic:** Instruction, Design procedure, Adders-Half adders, Full adder (text 2: 4.1, 4.2, 4.3)   (8 Hours)
Module – 4
Embedded Systems: Definition, Embedded systems vs general computing systems, Classification of Embedded Systems, Major applications areas of Embedded Systems, Elements of an Embedded System, Core of the Embedded System, Microprocessor vs Microcontroller, RISC Vs CISC   **Sensors and Interfacing** Instrumentation and control systems, Transducers, Sensors, Actuators,LED, 7- Segment LED Display. (Text- 1).   (8 Hours)
Module – 5
Applications of Electronic systems   1. Green tech application: Wind turbine for small power application   2. Liquid level control system.   3. pH neutralization system for wastewater treatment.   4. RFID system.

Recap/Summary of the Course   (8 Hours)

Textbooks:
1. Mike Tooley, 'Electronic Circuits, Fundamentals & Applications', 4th Edition, Elsevier, 2015. DOI http://doi.org/10.4324/9781315737980. eBook ISBN9781315737980
2. Digital Logic and Computer Design, M. Morris Mano, PHI Learning, 2008 ISBN-978-81203- 0417-84
3. D P Kothari, I J Nagrath, 'Basic Electronics', 2nd edition, MC Graw Hill Education (India), Private Limited, 2018.

B.E COMPUTER SCIENCE AND ENGINEERING			
Choice Based Credit System (CBCS)			
SEMESTER – II			
Introduction to C++ Programming (2:0:2)			
(Effective from the academic year 2023-2024)			
Course Code	**BPLCK205D**	CIE Marks	50
Course Type (Theory/Practical	**Integrated**	SEE Marks	50
Teaching Hours/Week (L:T:P)	2:0:2	Exam Hours	03
Total Number of Contact Hours	40	Credits	03

Course Objectives:

This course will enable students to:

1. Understanding about object-oriented programming and Gain knowledge about the capability to store information together in an object.
2. Understand the capability of a class to rely upon another class and functions.
3. Understand about constructors which are special type of functions.
4. Create and process data in files using file I/O functions.
5. Use the generic programming features of C++ including Exception handling

Module – I
Introduction to Object Oriented Programming: Computer programming background- C++ overview. First C++ Program -Basic C++ syntax, Object Oriented Programming: What is an object, Classes, methods and messages, abstraction and encapsulation, inheritance, abstract classes, polymorphism.   Textbook 1: Chapter 1(1.1 to 1.8) **(8 Hours)**
Module – II
Functions in C++: Tokens – Keywords – Identifiers and constants – Operators in C++ – Scope resolution operator – Expressions and their types – Special assignment expressions – Function prototyping – Call by reference – Return by reference – Inline functions -Default arguments – Function overloading.   Textbook 2: Chapter 3(3.2,3.3,3.4,3.13,3.14,3.19, 3.20) , chapter 4(4.3,4.4,4.5,4.6,4.7,4.9) **(8 Hours)**
Module – III
Inheritance & Polymorphism: Derived class Constructors, destructors-Types of Inheritance-Defining Derived classes, Single Inheritance, Multiple, Hierarchical Inheritance, Hybrid Inheritance.   Textbook 2: Chapter 6 (6.2,6.11) chapter 8 (8.1 to,8.8) **8 Hours)**
Module – IV
I/O Streams: C++ Class Hierarchy- File Stream-Text File Handling- Binary File Handling during file operations.   Textbook 1: Chapter 12(12.5) , Chapter 13 (13.6,13.7) **(8 Hours)**

Module – V
Exception Handling: Introduction to Exception - Benefits of Exception handling- Try and catch blockThrow statement- Pre-defined exceptions in C++

Textbook 2: Chapter 13 (13.2 to13.6)	**(8 Hours)**

Programming Assignments:
1. Write a C++ program to sort the elements in ascending and descending order.
2. Write a C++ program to find the sum of all the natural numbers from 1 to n.
3. Write a C++ program to swap 2 values by writing a function that uses call by reference technique.
4. Write a C++ program to demonstrate function overloading for the following prototypes.
   add(int a, int b)
   add(double a, double b)
5. Create a class named Shape with a function that prints "This is a shape". Create another class named Polygon inheriting the Shape class with the same function that prints "Polygon is a shape". Create two other classes named Rectangle and Triangle having the same function which prints "Rectangle is a polygon" and "Triangle is a polygon" respectively. Again, make another class named Square having the same function which prints "Square is a rectangle".Now, try calling the function by the object of each of these classes.
6. Suppose we have three classes Vehicle, FourWheeler, and Car. The class Vehicle is the base class, the class FourWheeler is derived from it and the class Car is derived from the class FourWheeler. Class Vehicle has a method 'vehicle' that prints 'I am a vehicle', class FourWheeler has a method 'fourWheeler' that prints 'I have four wheels', and class Car has a method 'car' that prints 'I am a car'. So, as this is a multi-level inheritance; we can have access to all the other classes methods from the object of the class Car. We invoke all the methods from a Car object and print the corresponding outputs of the methods.
So, if we invoke the methods in this order, car(), fourWheeler(), and vehicle(), then the output will be
      I am a car
      I have four wheels
      I am a vehicle
   Write a C++ program to demonstrate multilevel inheritance using this.
7. Write a C++ program to create a text file, check file created or not, if created it will write some text into the file and then read the text from the file.
8. Write aC++ program to write and read time in/from binary file using fstream
9. Write a function which throws a division by zero exception and catch it in catch block. Writea C++ program to demonstrate usage of try, catch and throw to handle exception.
10. Write a C++ program function which handles array of bounds exception using C++.

Course Outcomes:

The students will be able to:

CO1 : Able to understand and design the solution to a problem using object-oriented
programming concepts.

CO2 : Able to reuse the code with extensible Class types, User-defined operators and function
Overloading.

CO3 : Achieve code reusability and extensibility by means of Inheritance and Polymorphism

CO4 : Implement the features of C++ including templates, exceptions and file handling for
providing programmed solutions to complex problems.

Textbooks

1. Bhushan Trivedi, "Programming with ANSI C++", Oxford Press, Second Edition, 2012.

2. Balagurusamy E, Object Oriented Programming with C++, Tata McGraw Hill Education
Pvt.Ltd , Fourth Edition 2010.

Web links and Video Lectures (e-Resources):

1. Basics of C++ - https://www.youtube.com/watch?v=BClS40yzssA

2. Functions of C++ - https://www.youtube.com/watch?v=p8ehAjZWjPw

Tutorial Link:

1. https://www.w3schools.com/cpp/cpp_intro.asp
https://www.edx.org/course/introduction-to-c-3

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning
● **Assign small tasks to Develop and demonstrate using C++**

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 2022-2023)			
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. **3 hours**

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.
3. Meenakshi Raman and Sangeetha Sharma, Technical Communication – Principles and Practice, Oxford University Press, Third Edition 2017.

Department of Humanities and Social Sciences			
Choice Based Credit System (CBCS)			
SEMESTER – II			
Indian Constitution (1:0:0) 1			
(Common to all Branches)			
(Effective from the academic year 2022-2023)			
Course Code	**BICOK207**	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

Familiarize with the basic structure of our Indian Constitution.

Understand the Concept of Fundamental Rights, Directive Principles of State Policy and Fundamental Duties.

Enhance their knowledge on administrative mechanism at the Union and State government.

Learn about elections, emergency provisions, amendments and Special constitutional provisions.

Module – 1

Preamble: Significance and Scope of the course, Importance of the course in societal, political and economic growth of the nation.

Introduction and Basic information about the Indian Constitution:

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to the Indian constitution, Making of the Constitution, Role of the Constituent Assembly. Salient Features. **3 Hours**

Module – 2

Preamble and Fundamental Rights: Preamble of the Indian Constitution & Key concepts of the Preamble. Fundamental Rights (FR's) and its restriction and limitations in different Complex Situations. Case studies **3 Hours**

Module – 3

Directive Principles of State Policy and Fundamental Duties:

Directive Principles of State Policy- Importance and its relevance. Fundamental Duties and their significance. Special Constitutional Provisions for Schedule Castes, Schedule Tribes & Other Backward Classes and Women & Children. **3 Hours**

Module – 4

Union and State Administration:

The Union Executive-The President and The Vice President, The Prime Minister and The Council of Ministers, The Union Legislature -Lok Sabha & Rajya Sabha, Parliamentary Committees, Important Parliamentary Terminologies. The Union Judiciary- The Supreme Court of India and its jurisdiction. Judicial Review and Judicial Activism.

The State Executive-The Governors, The Chief Ministers and The Council of Ministers, The State Legislature- Legislative Assembly and Legislative Council, The State Judiciary- The State High Courts and its jurisdiction. **3 Hours**

Module – 5

Elections, Constitutional Amendments and Emergency Provisions:

Elections-Electoral Process in India, Election Commission of India: Powers & Functions, Constitutional Amendments- methods and Important Constitutional Amendments ie 42nd, 44th, 61st,74th, 76th, 77th, 86th ,91st, 100, 101st, 118th, Emergency Provisions-types and its effect. **3 Hours**

Course outcomes:

The students will be able to:
1. Understand the basic structure of our Indian Constitution.
2. Analyse the Concept of Fundamental Rights, Directive Principles of State Policy andFundamental Duties
3. Have knowledge on administrative mechanism at the Union and State government.
4. Understand the system of elections, emergency provisions, amendments and Special constitutional provisions

Textbooks

1. "Constitution of India" (for Competitive Exams), Naidhruva Edutech Learning Solutions, Bengaluru. – 2022.
2. Durga Das Basu (DD Basu): "Introduction to the Constitution of India" (Students Edition.) Prentice –Hall, 2008.

Reference Books:

1. Shubham Singles, Charles E. Haries, and et al, "Constitution of India, Professional Ethics and Human Rights", Cengage Learning India, Latest Edition – 2019.
2. Merunandan K B, "The Constitution of India", Merugu Publication, Second Edition, Bengaluru.
3. Justice H N Nagamohan Dhas "Samvidhana Odu" - for Students & Youths, Sahayana, kerekon.

II Semester

Course Title:	Scientific Foundations of Health			
Course Code:		**BSFHK258**	CIE Marks	50
Course Type (Theory/Practical/Integrated)		Integrated	SEE Marks	50
			Total Marks	100
Teaching Hours/Week (L:T:P:S)		1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy		15 hours	Credits	01

Course objectives:

The course Scientific Foundations of Health (22SFH18/28) will enable the students,

1. To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
2. To Build the healthy lifestyles for good health for their better future.
3. To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
4. To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future.
5. To Prevent and fight against harmful diseases for good health through positive mindset

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: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(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. 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.

Module-1 (**03 hours**)
Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality, Psychological disorders-Methods to improve good psychological health, Changing health habits for good health.
Module-2 (3 hours)
Building of healthy lifestyles for better future: Developing healthy diet for good health, Food & health, Nutritional guidelines for good health, Obesity & overweight disorders and its management, Eating disorders, Fitness components for health, Wellness and physical function, How to avoid exercise injuries.
Module-3 (3 hours)
Creation of Healthy and caring relationships : Building communication skills, Friends and friendship - Education, the value of relationship and communication skills, Relationships for Better or worsening of life, understanding of basic instincts of life (more than a biology), Changing health behaviors through social engineering.
Module-4 (3 hours)
Avoiding risks and harmful habits : Characteristics of health compromising behaviors, Recognizing and avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictive people and non addictive people & their behaviors. Effects of addictions Such as..., how to recovery from addictions.
Module-5 (3 hours)
Preventing & fighting against diseases for good health: How to protect from different types of infections, How to reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.

Course outcome (Course Skill Set)

At the end of the course Scientific Foundations of Health (22SFH18/28) the student will be able to:

CO1	Understand about Health and wellness (and its Beliefs) & It's balance for positive mindset.
CO2	Develop the healthy lifestyles for good health for their better future.
CO3	Build a Healthy and caring relationships to meet the requirements of good/social/positive life.
CO4	Study about avoiding risks and harmful habits in their campus and outside the campus for their bright future
CO5	Learn to fight against harmful diseases for good health through positive mindset.

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 InfiniteLearning Solutions, Bangalore – 2022.
3. **Health Psychology - A Textbook,** FOURTH EDITION by Jane Ogden McGraw HillEducation (India) Private Limited - Open University Press.

Reference Books:

1. **Health Psychology (Second edition)** by Charles Abraham, Mark Conner, Fiona Jones andDaryl 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
- Organizing Group wise discussions Connecting to placement activities
  Quizzes and Discussions, Seminars and assignments