Cummins College of Engineering for Women

(An autonomous institute affiliated to Savitribai Phule pune university)

Karve Nagar, Pune - 411 052.

Structure and Syllabus

of

F. Y. BTech

2023 Pattern [R1]

List of Abbreviations

Abbreviation	Title
PCC	Programme Core Course
BSC	Basic Science Course
ESC	Engineering Science Course
PE	Programme Elective Course
OE	Open Elective
VSEC	Vocational and Skill Enhancement Course
CC	Co-curricular Courses / Liberal Learning Course
IKS	Indian Knowledge System
VEC	Value Education Course
RM	Research Methodology
INTR	Internship
PROJ	Project
CEP	Community Engagement Project
RM	Research Methodology
Mm	Multidisciplinary Minor
AEC	Ability Enhancement course

First Year
Curriculum for UG Degree Course in BTech. E&TC/ Instru / Mech Programs
(Academic Year: 2025-26 Onwards)
Semester-I

Course Code	Course Title	Teaching Scheme Hours / Week			Cr	Examination Scheme			Total Marks
		L	T	P		ISE	ESE	Pr/Or	
BSC101	Physics	3	0	0	3	50	50	0	100
BSC103	Linear Algebra and Univariate Calculus	3	1	0	4	50	50	0	100
ESC103	Sustainable Renewable Energy	3	1	0	4	50	50	0	100
ESC101	Engineering Graphics	2	1	0	3	50	50	0	100
AEC101	Professional Communication	1	0	2	2	50	0	0	50
BSC101L	Physics Lab	0	0	2	1	25	0	0	25
ESC101L	Engineering Graphics Lab	0	0	2	1	25	0	0	25
VSEC101L	Programming Skills in C Language	0	0	4	2	25	0	25	50
CC101	Social & Emotional Learning	1	1	2	2	50	0	0	50
Total =		13	04	12	22	375	200	25	600

L=Lecture, T=Tutorial, P= Practical, Cr= Credits,
ISE =In Semester Evaluation, ESE=End Semester Examination,
Pr/Or= Practical/Oral.

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BSC101 Physics

Teaching Scheme	**Examination Scheme:**
Lecture 3 Hrs/week	In-semester: 50 Marks
Credits: 3	End-semester: 50 Marks

Course Objectives:

1. To offer broad areas of Physics which are required as an essential background for engineering students.

2. To develop students' ability to understand fundamental principles of electromagnetism, optics, statistical physics, and quantum physics, and apply these concepts effectively to solve problems.

3. To develop critical thinking in analyzing the properties of materials at bulk and nanoscales.

Course Outcomes:

After completion of this course a student should be able to

CO1: Apply the generalized Coulomb law and the law of Electromagnetic Radiation to determine the electric fields due to the stationery and the accelerated charges.

CO2: Apply the laws of Physical Optics to determine intensity distributions of interference – diffraction patterns, and to identify polarization-types.

CO3: Apply the principles of Statistical Physics to determine the thermal distribution of matter in different energy states and the thermal response of engineering materials.

CO 4: Justify the selection of — quantum probability rules and single qubit logic gates.

CO 5: Differentiate between the physical properties of 'nano' materials and of their 'bulk 'counterparts.

Unit 1: Electromagnetic Radiation and Interference:

Expression for the electric field beyond Coulomb's law; Two dipole radiators and Physics of interference; Mathematical treatment (propagating waves, rotating vectors, complex functions)

Unit 2: Diffraction and Polarization:

The resultant amplitude due to equal oscillators; Diffraction Grating; The electric vector of light; Types of Polarized Light; Birefringence; Polarizers

Unit 3: Statistical Mechanics and Thermodynamics:

Principles of Statistical Mechanics (Distribution of particles in thermal equilibrium); Laws of Thermodynamics (Carnot Cycle, Entropy, Clausius-Clapeyron Equation); Information Entropy

Unit 4: Quantum Physics:

Laws of combining probability amplitudes; The Hamiltonian matrix & Schrödinger equation; Two-state systems: Pauli spin matrices & Photon polarization states; Single Qubit Logic Gates

Unit 5: Properties of Solids:

Band Theory; Electrical (conductivity, resistivity), Magnetic (dia-para-ferro), Optical (absorbance, reflectance, transmittance), Mechanical (hardness, elasticity) properties (of 'bulk' & nano' solids)

Textbooks:

R. P. Feynman, R. B. Leighton and M. Sands, The Feynman Lectures on Physics',

Pearson Education (2006)

Reference Books:

1.   J. Walker, D. Halliday, R, Resnick, Principles of Physics', Wiley *Student Edition*

    (10th Edition)

2.   H. Young and Roger Freedman, University Physics, Pearson Addison Wesley(12th Edition)

BSC103 Linear Algebra and Univariate Calculus

Teaching scheme   **Examination scheme**
Lectures: 3hrs/week   In-Sem Exam: 50 Marks
Tutorial: 1hr/week   End-Sem Exam: 50 Marks
Credits: 4

Course Objectives:

1. To familiarize the prospective engineers with techniques in linear algebra and calculus of one variable.

2. To equip the students with standard concepts and tools in linear algebra and calculus of one variable which they will find useful in their disciplines.

Course Outcomes:

After completion of this course a student should be able to

CO1: Use matrix method to solve linear system of equations, Linear Transformations.

CO2: Calculate eigenvalues, eigenvectors and apply them to decompose the matrix.

CO3: Apply knowledge of linear algebra to solve simple real-life problems.

CO4: Compute differentiation, series expansion, integration of function of one variable.

Unit-I: Matrices

Rank of a matrix, Echelon form, System of linear equations, Euclidean vector spaces and Linear Transformations

Unit-II: Decomposition of a Matrix

Eigenvalues, Eigenvectors, Properties of Eigenvalues, Matrix Factorization Techniques: Singular Value Decomposition (SVD), Eigenvalue decomposition.

Unit-III: Applications of Linear Algebra

Introduction to Modular Arithmetic, Euclid's algorithm, Encrypt and decrypt the statement using matrix, Applications to simple real-life problems

Unit-IV: Differential Calculus

Successive differentiation, nth order derivatives of some standard functions, Taylor's and Maclaurin's theorem, Standard series expansions

Unit-V: Integral Calculus

Reduction formulae, Beta Function, Gamma function, Differentiation under integral sign, Error function

Textbooks:

1. B. V. Ramana, 'Higher Engineering Mathematics', *Tata McGraw-Hill Publications*, (2007).

2. B.S. Grewal, 'Higher Engineering Mathematics', *Khanna publishers*, Delhi (40th edition), (2008).

3. Erwin Kreyszig, Advanced Engineering Mathematics, *Wiley Eastern Ltd* (10th Edition), (2017)

Reference Books:

1. C.R. Wylie, L. C. Barrette, Advanced Engineering Mathematics*', McGraw-Hill Publications*, *New Delhi* (6th edition), (2006)

2. Maurice Weir, Joel Hass, Thomas *'Calculus'*, 12th edition, *Pearson India* (2016)

3. George Thomas, Jr., Ross Finney, Late, Calculus, 9th edition, *Pearsons India*

4. Sudhir Ghorpade, Balmohan Limaye, A Course in Calculus and Real Analysis*'*, (Undergraduate Text in Mathematics), *Springer* (2006).

5. David Poole, Linear Algebra: A Modern Introduction', 2nd Edition, Brooks/Cole (2005).

ESC103 Sustainable Renewable Energy

Teaching Scheme	**Examination Scheme**
Lecture: 3 Hrs/week	In semester: 50 marks
Tutorial: 1Hr/week	End Semester: 50 Marks
Credits: 4	

Course Objective:

1. To acquire knowledge, skills, values & attitudes that empower us to contribute to a sustainable energy future.

2. Understanding how renewable energy systems work, their efficiency, and their limitations.

Course Outcomes:

After completion of this course a student should be able to

CO1: Explain the importance of renewable energy for sustainability.

CO2: Differentiate between various solar energy systems (thermal and PV)

CO3: Compare different wind energy systems based on feasibility and efficiency.

CO4: Compare different types of biofuels and waste-to-energy technologies.

CO5: Explain the challenges and opportunities in integrating ocean & geothermal energy into existing systems.

Unit 1: Introduction to Energy and Sustainability

Introduction & types of conventional & non-conventional energy resources, Energy scenario: Global and Indian, Limitations of conventional energy, Basics of sustainable development, Linkage with SDGs (esp. SDG 7)

Unit 2: Solar Energy

Solar radiation fundamentals, Solar thermal systems: collectors, water heaters, dryers, Solar PV systems: working, types, applications., Advantages & disadvantages of solar photovoltaic systems, Solar energy storage and recent developments.

Unit 3: Wind Energy

Basics of wind energy and wind formation, Wind turbine types and working principles, Site selection and wind farm layout, Environmental impacts, and hybrid systems

Unit 4: Bioenergy

Biomass resources and classification, Biogas production: process and applications, Types-Biodiesel, bioethanol, and biohydrogen, Waste-to-energy technology

Unit 5: Energy from Oceans and Geothermal

Tidal and wave energy principles, Ocean Thermal Energy Conversion (OTEC), Geothermal resources and power generation, Limitations and challenges, Future of renewable energy — AI and smart systems

Recommended Textbooks & Resources

1. Non-Conventional Energy Sources by *G.D. Rai*

2. Renewable Energy Engineering and Technology – *VVN Kishore (TERI Press)*

3. Renewable Energy Resources *by JOHN Twidell- Routledge publisher*

4. MNRE website, UN SDG Reports, IPCC Reports

5. NPTEL video lectures on Renewable Energy

Renewable Energy Resources

ESC101 Engineering Graphics

Teaching Scheme: **Examination Scheme:**
Theory: 2 Hrs/week   In semester: 50 Marks
Tutorial: 1 Hr/week   End semester: 50
Credits: 3

Course Objectives:
1. To develop the visualization and interpretation skills for the physical objects.
2. To provide the basic knowledge and develop the skills for creating 2 D drawings.
3. To provide the basic knowledge and develop the skills for creating Isometric views.
4. To familiarize about the development of solids.
5. To familiarize the construction and applications of Engineering Curves.

Course Outcomes:

After completing the course students will be able to draw
CO1: Orthographic and sectional orthographic projections of an object
CO2: Isometric views of the given object
CO3: Development of surfaces of the given object
CO4: Engineering curves by applying the given method

Unit 1

Introduction: Layout and sizes of drawing sheets, drawing instruments, types of lines used in drawing practice, dimensioning systems, representation of tolerances, standard codes by B.I.S (SP- 46). (Not for Examination)

Unit 2

Orthographic Projection: Theory of projections, methods of obtaining orthographic views, sectional orthographic projections, Missing views.

Unit 3

Isometric Views: Isometric axes, Isometric scale, isometric projections and views, construction of isometric view from given orthographic views

Unit 4

Development of Solids: Parallel line development, radial line development, methods to transfer points

for development of prisms, pyramids, cylinder and cone.

Unit 5

Engineering Curves: Construction of ellipse, parabola, hyperbola, involute, cycloid, Archimedean spiral, helix on cone and cylinder.

Text Books:

1. N. D. Bhatt and V. M. Panchal, 'Engineering drawing, plane and solid geometry, Charotor Publication House.
2. R. K. Dhawan, 'A text book of Engineering Drawing', Pearson Education Inc.
3. P.S. Gill, 'Engineering Graphics', Kataria and sons Publications.
4. M. L. Dabhade, 'Engineering Graphics', Vision Publications.

Reference Books:

1. Warren J. Luzzader, 'Fundamentals of Engineering Drawing', Prentice Hall of India, New Delhi.
2. Fredderock E. Giesecke, Alva Mitchell, 'Principles of Engineering Graphics', Maxwell
3. Dhananjay A. Jolhe, 'Engineering Drawing', Tata McGraw Hill Publishing Co. Ltd.

AEC 101 Professional Communication

Teaching Scheme	**Examination Scheme:**
Lecture: 1 Hr/week	In semester: 50 marks
Practical: 2Hrs/week	Credits: 2

Course Objectives:

1. Introduce fundamental concepts of professional communication
2. Enable students to communicate effectively
3. Prepare students to communicate effectively within teams
4. Develop skills in online communication, etiquette and professionalism

Course Outcome:

After completion of this course a student should be able to

1. Explain the fundamentals of effective communication
    2. Develop proficient written communication skills
    3. Display their verbal communication skills through presentations
    4. Utilize digital tools and platforms effectively for communication

Module 1: Foundations of Professional Communication

Importance and relevance of effective communication, 7 Cs of Professional Communication (Clarity, Conciseness, correctness, Coherent, concrete, courteous and Complete) Listening, non-verbal communication, Verbal communication, Written communication, Barriers to communication, Types of barriers (Linguistic, Psychological, Technological), channels.

Module 2: Technical Writing and Documentation

Principles of technical writing: audience, purpose, and context. Technical documentation formats: manuals, instructions, specifications. Visual aids, data presentation, proof reading, grammar and readability check, available tools, Email, reports, resumes, Project proposals, progress reports, working in teams, plagiarism and ethics.

Module 3: Professional Verbal Communication

Elements of effective verbal communication: clarity, tone, pace, volume. formal and informal communication, Body language, facial expressions, gestures, postures, eye contact, voice tone, Active listening, Presentations, public speaking, Storytelling, interpersonal communication.

Module 4: Digital Communication

Digital communication, digital footprints, email/ phone call/virtual meeting etiquette, Professional use of social media, blogs and networking platforms. Virtual meetings, social media Profiles, LinkedIn, security issues, available tools.

Textbooks:

1. M. Ashraf Rizvi, "Effective Technical Communication", Tata McGraw-Hill Publishing Company Limited, New Delhi (2008)

2. Jeff Butterfield, "Soft Skills for Everyone" Cengage Learning India Private Limited, New Delhi (2019)

Reference Books:

1. William Strunk and E. B. White, "Elements of style", CreateSpace Independent Publishing Platform, (2018).

2. William K Zinsser, "On Writing well", HarperCollins, (2012).

3. Satish Ranade, "Presentations: An Art & A Science" , Vishwakarma Publications (2019)

Website URL:

TED talks - https://www.ted.com/talks

Suggested Assignments:

Minimum 8 assignments to be conducted during the practical sessions.

Proposed distribution: 1 assignment on listening skill, 3 assignments written communication, 3 assignments verbal communication, 1 group presentation.

1. Listen to audio podcasts/ watch a ted talk and make notes/summary of it.

2. Write an email to your professor/dream company requesting an internship, including proper subject, greeting, body, and closing.

3. Create a one-page resume and a tailored cover letter for a summer internship in your engineering domain.

4. Write a 300–400-word technical description of a common engineering object (e.g., a bicycle, USB drive, or power bank).

5. Create a LinkedIn profile and write a compelling "About" summary (100–150 words) highlighting your background and aspirations.

6. Choose a recent article from a tech magazine/blog and write a 300-word summary along with your reflection on its significance.

7. Draft Enquiry letter/ Complaint letter.

8. Present the summary of a ted talk/ podcast (3 minutes)

9. Narrate a story on any topic of your interest/hobbies/experience (3 minutes) such as movie review, yoga, sport, tour.

10. Record a one-minute introduction video/ Give one minute introduction

11. Conduct an interview with any person (define objective, prepare questionnaire and flow). Peer interviews encouraged within the batch (3 minutes).

12. In groups of 3-4, research an emerging technology (e.g., AI in transportation, green energy) and present it using slides in 7–10 minutes.

13. In groups of 3-4, prepare a possible technical project proposal and present it using slides in 7–10 minutes.

14. Review and provide feedback on a peer's presentation assignment based on a rubric.

15. Review and provide written feedback on a peer's resume, email, or technical writing assignment based on a rubric.

BSC101L Physics Lab

Teaching Scheme:	**Examination Scheme:**
Practical: 2 Hrs. / Week	In semester: 25Marks
Credits: 1	

Course Objectives:

The objective of the Physics Lab course is two-fold:

To inculcate experimental skills, and

To demonstrate the interplay between theoretical & experimental physics.

Course outcomes:

After completion of this course a student should be able to

CO 1: Record the observations as per the least counts of measuring instruments and perform necessary calculations.

CO 2: Compare the experimental findings with the corresponding theoretical physics models.

CO 3: Determine errors in experimental findings and Analyze their sources and causes.

CO 4: Reach the conclusions pertaining to the observed behavior of physical systems.

List of Experiments:

Physical Optics Experiments:

I. Polarization of light, II. Diffraction Grating: Emission Spectra, III. Michelson Interferometer, and IV. Newton's Rings.

Electromagnetism & Heat Experiments:

I. Dia-Para-Ferromagnetism: Magnetic Permeability, II. Faraday's Law, and III. Hysteresis (B-H) Curve of Iron core, IV: Specific Heat of solid materials.

Modern Physics Experiments:

I. Planck's Constant, II. I - V Characteristic of LED, III. Hall Effect, and IV. Zeeman Effect.

ESC101L Engineering Graphics Lab

Teaching Scheme: **Examination Scheme:**
 Practical: 2 Hrs./week   In Semester: 25 marks
Credits: 1

Course Objectives:

To familiarize student about

1. Advantages of using software for Engineering drawing
2. 2-D drafting using a software
3. 3-D modeling using a software
4. 3-D printing technology

Course Outcomes:

After completing the course using a software package students will be able to

CO1: Draw orthographic projections of a given component.
CO2: Draw Isometric projections of a given component.
CO3: Draw development of solids
CO4: Draw free hand sketches of the machine elements.

Part I

Introduction to 2-D Drafting using a drafting software

- Orthographic Projections
- Isometric Projections
- Development of surfaces of solids
- Free hand sketching of standard machine elements

Part II

Demonstration of 3-D Modeling and 3-D Printing

Creating a 3-D model of a simple component using a solid modeling software and manufacture using a rapid prototyping technique.

Text Books:

N. D. Bhatt and V. M. Panchal,**'***Engineering drawing, plane and solid geometry'*,Charotor Publication House*.*

M.L.Dabhade, 'Engineering Graphics', *Vision Publications.*

Bethune, J.D., "*Engineering Graphics with AutoCAD 2013*", PHI Learning Private Limited, Delhi, 2013

VSEC101L Programming Skills in C Language Lab

Teaching Scheme:	Examination Scheme:
Practical: 4 Hr/week	In-Sem: 25 Marks
Credits: 2	Practical/oral: 25 Marks

Course Objectives:

To facilitate the learners:

1. To learn the fundamentals of C programming for logic building.
2. To implement a solution of a given problem using appropriate data type, operators of C language.
2. To understand the decision and iteration interpretation in a programming language.
4. To implement the logic using arrays, strings, functions, pointers and structures of C programming language.

Course Outcomes:

After completion of course, students will be able to

CO1: Develop the logic for a given problem using flowchart/ algorithm/ pseudo code.

CO2: Apply appropriate basic language constructs, decision and iterative constructs for solving the given problem.

CO3: Implement the solution for a given problem using Arrays, String, Structures and functions.

CO4: Apply C programming skills to simulate real life problems/scenarios/applications.

Intent of this laboratory is to build the logic development and problem solving skills of students and build proficiency and competency in C language. For this purpose a sample list of assignments are grouped into Group A, Group B and Group C with increasing levels of difficulty and understanding.

Group A assignments are based on real life problems using language constructs such as constant, variable, data type, operator, array, string, expressions, decision, iteration etc.

Group B assignments are based on the applications of language constructs and combination of language constructs, control structures, String, Arrays, Pointers, Structures, Functions.

Group C assignments are a little more challenging. Assignments will be open ended which can either be a mini project or simulation of real life problems/scenarios/applications. It can also

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include Debugging and Feature enhancement / Alternative solution/ testing / Code-refactoring of given problem statements or Analyze the given code and comment on the output.

Instructors can conduct a total of 10 assignments, six from Group A, three from Group B, one from Group C. Other assignments can be considered as extra assignments.

Instructors must enhance assignment by coming up with new application domains, by combining multiple constructs in one assignment or more complex logic.

Suggestive List of Assignments

Assignment 0: Get acquainted with Windows/Linux Platform, C environment, IDE installation, structure of basic C program, compilation, debugging and execution of C program.

Group A - Language constructs

For Group A problem statements, students should draw flowchart/ algorithm/ pseudo code and convert it into a C program. Problems are based on constructs such as concepts of constant, variable, data type, operator and expressions, arrays, strings, iteration, decision making and others.

1) Convert measurement units such as feet to inches, inches to centimeters, and centimeters to meters, Kilograms to grams, grams to milligrams, Dollar to Rupees, Euro to Rupees, temperature conversion Degree to Fahrenheit, days into years, weeks and days and vice versa.
2) Basic problems of Engineering Mathematics and Physics like area calculation, sine wave calculation, speed calculation, determining type of triangle, verify pythagoras theorem etc.
3) Obtain the first 25 numbers of a Fibonacci sequence/prime numbers with and without recursion etc.
4) Search the data from an array of numbers/ characters/ string.
5) Calculate the total number of characters in the string and the total number of vowels in the string with the number of occurrences in the string.
6) Operations on matrices.
7) Find the maximum/minimum of given numbers.
8) Order the numbers in sequence.
9) Swap two data elements using pass by value, pass by reference and without using a third variable.
10) Number conversion (decimal to binary, binary to decimal, binary to octal, octal to binary)
11) Reverse a string without using a third variable.

Group B - Applications of Language Constructs

Group B problem statements address the applications of language constructs such as Loops for iteration, Arrays, Strings, Structures, Functions for modularity wherever required. They should implement the application using a function (call by reference/ call by value) wherever appropriate.

Problems are based on real life applications/ scenarios.

1) Perform employee operations such as accept, display, search by name, search by number, update a record. Explore the possibility of modularity for implementation.

2) For a class an examination is conducted and the results for the students of all the 5 subjects are recorded. Write a C program to display the record of students. On the basis of the record compute:

   i. The average score of class

   ii. Highest score and lowest score of class

   iii. Marks scored by most of the students

   iv. List of students who were absent for the test

3) Write a menu-based modular program in C to perform following operations for complex numbers:

   i. reading a complex number

   ii. writing a complex number

   iii. addition of two complex numbers

   iv. subtraction of two complex numbers

   v. multiplication of two complex numbers

4) Two friends issued 5 books each from the library, Write a program in C to compute operations

   i   List of all books with them

   ii. List common titles with them

   iii. List of books with friend 1 but not with friend 2

5) A list of names of users of a product of a company is provided. Write a modular C program to calculate the total number of characters in the name and the total number of vowels in the name with the number of occurrences in the name, search set of characters in name, and sort names.

6) Create a structure to specify data of customers in a bank. The data to be stored is: Account number, Name, Balance in account. Assume a maximum of 200 customers in the bank. (a) Write a function to print the Account number and name of each customer with balance below Rs. 100. (b) If a customer requests for withdrawal or deposit, it is given in the form: Acct. no, amount, code (1 for deposit, 0 for withdrawal) Write a program to give a message, "The balance is insufficient for the specified withdrawal"

7) Find Permutations in which n people can occupy r seats in a theatre.

8) In a secret language DOG is written as HSK, CAT is written as GEX. Write a program to accept a string from a user and convert it into the secret language and accept a string in the

secret language and convert it back to English.

Group C

Group C problem statements address big real life problem solving. Students are expected to apply the learnt concepts to solve these problems. Students should choose any one of the following:-

1) Mini Project - Small games like - tic-tac-toe, Create Crossword, Solving sudoku, Information system projects

   Students should implement a mini project/ game which simulates real life problems/scenarios/applications. They are expected to make use of the appropriate constructs of C language.

2) Debugging and Feature enhancement / Alternative solution / testing / Code-refactoring of given problem statement.

   Students will be given a large and ready code. Students are expected to read and understand the code, be able to debug the code, be able to enhance the feature in given code, to be able to find alternative solutions, or refactor the given code.

Text Books:-

1) Kernighan and Ritchie, " The C programming language" (2nd edition)., Prentice Hall of India, 1988.

2)   G.Dromey,"How to Solve it by Computer",Prentice-HallInc.,Upper Saddle River,NJ, 1982.

3) Yashwant Kanetkar, "Let's C", Allied Publishers,1998.

Reference books:-

1) Reema Thareja, "Introduction to C programming", Oxford University press(2nd edition),2015.

2) Alan R. Feuer, "The C Puzzle book", Pearson,1999

3) E Balagurusamy, "Computing Fundamentals and C Programming", (2nd edition), TMH,

CC101 Social and Emotional Learning

Teaching Scheme
Lecture: 1 Hr/week
Tutorial: 1-hour

Examination Scheme:
In semester: 50 marks
Credits: 2

Course Objectives:

1. Introduce social and emotional intelligence with significance in personal and professional development.

2. Equip students with skills to manage emotions, stress, and interpersonal relationships.

3. Foster empathy and teamwork in personal and professional contexts.

Course Outcome:

After completion of this course a student should be able to

1. Identify and reflect on their emotions, values, and behaviour patterns

2. Develop self-awareness, emotional regulation, stress management, and motivation.

3. Demonstrate empathy in diverse teams and social settings.

Unit 1: Introduction to Social and Emotional Learning

EQ Vs IQ, EQ importance and models (CASEL, Goleman), self-awareness, self-management, social awareness, relationship skills, and responsible decision-making, Types of emotions, Effect of emotions: physiological, thinking, actions and outcomes. Emotional maturity, Personality types, Role of SEL in academic success, and well-being

Unit 2: Self-Management and Personal Development

Managing emotions, impulses, and stress, tools: mindfulness, cognitive restructuring, SMART Goal

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setting, personal motivation (intrinsic vs. extrinsic), Time and stress management tools and techniques, building resilience and adaptability, Adversity quotient and grit, Techniques for building self-efficacy

Unit 3: Social Awareness and Relationship Building

Social quotient, understanding others' emotions, Empathy and Perspectives, Cognitive vs. affective empathy, Barriers to empathy, Active listening and reflective responding, building trust and rapport, understanding cultural differences and social identity, Digital identity, handling bias, Inclusive group dynamics

Textbooks:

1. Black, Donna Lord (2022). Essentials of Social and Emotional Learning (SEL). NJ :

   Wiley.

2. Goleman, Amiel (2005). Emotional intelligence. USA: Bantam.

Reference Books:

1. Daniel Goleman (1996) Emotional Intelligence. Why it can matter more than IQ. Bantam Doubleday Dell Publishing Group.

2. Daniel Goleman (2000) Working with Emotional Intelligence. Bantam Doubleday Dell Publishing Group

3. Liz Wilson, Stephen Neale & Lisa Spencer-Arnell (2012). Emotional Intelligence Coaching. Kogan Page India Private Limited

Suggested Assignments:

Minimum 8 assignments to be conducted

1. Take an EQ test and submit a 300-word reflection on key insights and growth areas.

2. Track and reflect on your emotions for 5 consecutive days. Identify patterns and triggers.

3. Identify 3 personal emotional triggers (Red = intense, Yellow = mild, Green = manageable) and discuss coping ideas.

4. Define a personal or academic goal using SMART criteria. Submit a progress report over 3 weeks.

5. State what your view about success and happiness is with examples.

6. Try at least 2 stress management techniques over a week. And write reflections.

7. Track your daily time usage for 3 days. And submit a revised weekly plan to improve time effectiveness.

8. Interview a peer about a challenge they're facing. Create an empathy map capturing thoughts, feelings, and needs.

9. Reflect on a time you worked with someone from a different background.

10. Role plays on a given situation for empathy learning.

11. Role plays on a given situation for conflict management.

12. Develop a personal plan that incorporates SEL goals for the next 5 years.

13. Choose any existing product or service and identify how you can make it more inclusive.

14. In small groups, invent a product or app with a social goal (e.g., sustainability, health). Present its ethical implications and suggest how it can be more inclusive.

15. Create a poster/short video based on topics/ your reflections/ event analysis