GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

COURSE SCHEME
B.Tech. 1st SEMESTER COMPUTER SCIENCE & ENGINEERING
(Batch 2025 & Onwards)

Contact Hours/Week: 23

Course Code	Course Type	Course Title	Credits	Load Allocation			Marks Distribution					
				L	T	P	CWA	PRS	MSE	ESE	PRE	Total
BMAT11	Basic Science Course	Engineering Mathematics-I	3	2	1	0	20	-	20	60	-	100
BMET12	Engineering Science Course	Engineering Graphics with CAD	3	3	0	0	20	-	20	60	-	100
BHST11	Humanities & Management courses	Universal Human Values and Ethics	3	2	1	0	20	-	20	60	-	100
BPHT11	Basic Science Course	Applied Engineering Physics	2	1	1	0	20	-	20	60	-	100
BECT11	Engineering Science Course	Basic Electronics Engineering	3	2	1	0	20	-	20	60	-	100
BCST11	Engineering Science Course	Computer Programming	3	2	1	0	20	-	20	60	-	100
BPHL11	Basic Science Course	Applied Engineering. Physics lab	1	0	0	2	-	40	-	-	60	100
BECL11	Engineering Science Course	Basic Electronics Engineering Lab	1	0	0	2	-	40	-	-	60	100
BCSL11	Engineering Science Course	Computer Programming Lab	1	0	0	2	-	40	-	-	60	100
	TOTAL		**20**	**12**	**05**	**06**	**-**	**-**	**-**	**-**	**-**	**900**

CWA- Class Work Assessment; PRS- Practical Sessional; MSE- Mid Sem Exam; PRE-Practical Exam; ESE- End Sem Exam

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CE/CSE/ECE/EE/ME				
Semester	I[st]			
Name of the Course	ENGINEERING MATHEMATICS-I			
Course Code	BMAT11	**Credits**	3	L- 2, T- 1, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks = 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	Apply general theorems of calculus to analyze the behaviour of real-valued functions and determine maxima and minima of functions of two variables.
CO 2	Understand fundamental concepts of integration, special functions, and techniques for evaluating double and triple integrals.
CO 3	Analyze and solve problems involving complex trigonometric functions.
CO 4	Determine rank, eigen values and eigen vectors of matrices using matrix operations

Section-A

DIFFERENTIAL AND INTEGRAL CALCULUS

Partial differentiation, Euler's theorem on homogeneous functions, Rolle's theorem, Mean value theorem. **(07 Hours)**

Taylor's and Maclaurin's series in two variables, Maxima and Minima of functions of two variables, Method of Lagrange's multipliers. **(07 Hours)**

Definite integrals with important properties, differentiation under the integral sign, Gamma, Beta and error functions with simple problems, double and triple integrals with simple problems. **(07 Hours)**

Section-B

COMPLEX TRIGONOMETRY AND MATRICES

Hyperbolic functions of a complex variable, Inverse Hyperbolic functions, Logarithmic function of a complex variable, Summation of series by C+iS method. **(07 Hours)**

Matrices: Rank of a matrix, Elementary transformations, Elementary matrices, Inverse using elementary transformations, Normal form of a matrix. **(07 Hours)**

Eigen values and Eigen vectors, Properties of Eigen values, Cayley Hamilton Theorem, Inverse using Cayley Hamilton Theorem, Diagonalization of matrix. **(07 Hours)**

BOOKS RECOMMENDED:

- Calculus and Analytic Geometry Thomas and Finney
- Differential Calculus S. Narayan and P.K. Mittal
- Higher Engineering Mathematics B.S Grewal, Khanna
- Engineering Mathematics-I Dr. Bhopinder Singh
- Engineering Mathematics-II Dr. Bhopinder Singh
- Engineering Mathematics-I Dr. Ambika Bhat

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II & III) selecting two from each.

Use of scientific calculators (non-programmable), log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/EE				
Semester	I[st]			
Name of the Course	ENGINEERING GRAPHICS WITH CAD			
Course Code	BMET12	**Credits**	3	L- 3, T- 0, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks = 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	Understanding and use engineering with accuracy and interpret missing views
CO 2	To have knowledge of Industrial practices and standards.
CO 3	To understand the principles of engineering drawing
CO 4	Knowledge of computer Aided design and drafting
CO 5	To interpret, and represent three-dimensional engineering objects through accurate projection of points, lines, planes and solids, including sectional views using rotation and auxiliary plane methods.

SECTION-A

Unit I Lettering and Dimensioning: Introduction, Lines, types of lines, Lettering, Single stroke Lettering, Dimensioning, placing of dimensions, Aligned and unidirectional.
Engineering Curves: Curves used in Engineering Practice: Cycloidals, Involutes, Spirals and Helices, Locus of a point on simple mechanism. **(12 hours)**

Unit II Projection of Planes:
Projections of a plane w.r.t. the principle planes in simple and inclined positions. Rotation method and the Auxiliary plane method. Space relation of a plane. To locate a point on a plane given its projections. Parallel relation of planes. Projection of planes inclined to different principal plane.

Projection of Solids: Classification and main Features-Prisms and Pyramids. Projection of solids inclined to both the reference planes by (1) Rotation Method, and (I) Auxiliary plane method. Projection of solids in combination (Co-axial) in simple and inclined positions. **(10 hours)**

SECTION B

Unit III Sectioning of Solids: Object of sectioning, Types of cutting planes, True shape of section, Auxiliary views of sections of multiple co-axial solids in simple and titled conditions.

Development of Surfaces: Classification of surfaces, Methods of Development-Straight line method and Radial line method, Development of solids and hollow sections in full or part development of transition pieces. To draw projections from given development. **(10 hours)**

Unit IV Overview of Computer Graphics covering:
Listing the computer technologies that impact on graphical communication, demonstrating knowledge of the theory of CAD software (such as: The Menu System, Toolbars (Standard, Object Properties, Draw, Modify and Dimension), Drawing Area (Background, Crosshairs, Coordinate System), Dialog boxes and windows, Shortcut menus (Button Bars), The Command Line (where applicable), The Status Bar, Different methods of zoom as used in CAD, Select and erase objects. **(07 hours)**

Orthographic Projections: Orthographic projection of simple blocks (First & Third angles), to draw the third view from given two views. Missing lines in projection. **(12 hours)**

RECOMMENDEDBOOKS:

1.	Engineering Drawing	P.SGill
2.	Practical Geometry	V.Laxminarayan &GEV
3.	Engineering Graphics	K.L.Narayanan&P.Kanaiah
4.	Engineering Graphics with AutoCAD	D. M. Kulkarni, A. P. Rastogi

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II & III) selecting two from each.

Use of scientific calculators (non-programmable), log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/EE				
Semester	I[st]			
Name of the Course	**UNIVERSAL HUMAN VALUES AND ETHICS**			
Course Code	**BHST11**	**Credits**	3	L- 2 , T- 1 , P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO1	Comprehend the significance of human values and implement them in both personal and professional settings.
CO2	Comprehend the holistic approach about the family and society
CO3	Develop an extensive awareness of nature and the ability to self-regulate in nature.
CO4	To make the students realize the significance of ethics in professional environment.

Section A

Introduction to Value Education

Value Education: Concept, Need, Basic Guidelines and Content of Value Education. Self -Exploration as the Process of Value Education: Meaning, Content, Process and important implications of Self-exploration, Natural Acceptance- The basis for Right Understanding**.**

Basic Human Aspirations and their Fulfilment: Meaning of Basic Aspiration, Continuous Happiness and Prosperity, Right Understanding, Relationship and Physical Facilities the Basic Requirements for fulfillment of aspirations of every human being with their correct priority. Development of Human Consciousness and Role of Education-Sanskar. **(11 hours)**

Harmony in the Human Being

Human being as a co-existence of Self and Body: Needs, Activities and Response of Self and Body. Self as the Conscious Entity and Body as the Material Entity.

Sources of Imagination-Preconditioning, Sensation and Natural Acceptance

Harmony of Self with the Body: Body as an instrument of 'I' (I am the Seer, Doer and Enjoyer/ Experiencer)

Programme for ensuring Self-regulation and Health: Nurturing, Protecting and Right Utilization of Body. **(10 hours)**

Section B

Harmony in the Family and Society

Harmony in Human- Human Relationship: Understanding of Relationship, Family as the basic unit of Human Interaction, Feelings (Values) in relationship- Nine Values

Trust (Vishwas) as the Foundation Value: Difference between Intention and Competence

Respect (*Samman)* as Right Evaluation: Over, Under and Otherwise Evaluation

Justice (Nyaya): Meaning of Justice and Program for its fulfilment to ensure mutual happiness.

Understanding Universal Human Order: Human Goal, Dimensions (Systems) of Human Order. Harmony from Family Order to World Family Order. **(11 hours)**

Harmony in the Nature and Existence
Interconnectedness and Mutual Fulfillment among the four orders of nature, Realizing existence as co-existence at all levels, The Holistic Perception of Harmony in existence.
Ethics
Nature, scope and method of ethics. Distinction between values and ethics, Principles of personal and professional ethics, Ability to utilize the professional competence for augmenting universal human order. Corporate Social Responsibility (CSR)- Meaning and Importance **(10 hours)**

BOOKS RECOMMENDED:

- B L Bajpai, 2004, Indian Ethos and Modern Management, New Royal Book Co., Lucknow.2008
- PL Dhar, RR Gaur, 1990, Science and Humanism, Common wealth Publishers.
- Sussan George, 1976, How the Other Half Dies, Penguin Press. Reprinted 1986, 1991
- Ivan Illich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA
- Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, William W. Behrens III, 1972, limits to Growth, Club of Rome's Report, Universe Books.

References:

- R.R Gaur, R Sangal, G P Bagaria, A foundation course in Human Values and Professional Ethics, Excel books, New Delhi, 2010,
- PPTs of Lectures and Practice Sessions
- Audio-visual material for use in the practice sessions
- Nagarasan, R.S. Professional Ethics and Human Values. New Age International Publications, 2006.

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/EE				
Semester	I[st]			
Name of the Course	APPLIED ENGINEERING PHYSICS			
Course Code	BPHT11	**Credits**	2	L- 1, T- 1, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	Comprehend the basic laws governing electric and magnetic fields and their interrelation through electromagnetic induction.
CO 2	Understand the significance of vector calculus and Maxwell's equations as the basis of Electromagnetic theory.
CO 3	Learn the key ideas of laser physics and quantum mechanics, and how these are used in various scientific and engineering fields
CO 4	Acquire knowledge of semiconductor physics along with different aspects of applied optics & their applications

Section A

UNIT1: LAWS OF ELECTRICITY AND MAGNETISM

Electrostatics field, Electric flux, Gauss's theorem of electrostatics, Magnetic effect of current and Magnetic field, Magnetic flux, Biot-Savart's law, Amper's circuit law & its modified form, Electromotive force, Faraday's Laws of Electromagnetic Induction (Integral & Differential form), Lenz's law.

(06 hours)

UNIT-2: ELECTROMAGNETIC FIELDS AND WAVES

Concepts of Del Operator- gradient, divergence, curl and their physical significances, Displacement Current. Maxwell's equations in integral and differential form, Poynting vector and Poynting theorem, Electromagnetic wave propagation in free space (Em wave equations for electric & magnetic fields for free space) & their solutions (plane wave solution), velocity of Em waves, Relation between E_0 & B_0. **(07 hours)**

UNIT-3: LASER PHYSICS

Concept and principle of Laser action, Spontaneous and Stimulated emission, Einstein's Co-efficient and relations, three and four level laser system, coherence and characteristics of laser light, He–Ne, Applications of lasers.

(04 hours)

Section B

UNIT -4: QUANTUM MECHANICS

Need of quantum mechanics, Compton effect, concept of wave function, Eigen function and Eigen values, operators in quantum mechanics, Schrodinger's wave equation (Steady- state and Time-dependent) for one-dimensional case. **(05 hours)**

UNIT-5: SEMICONDUCTOR PHYSICS

Structure of Atoms, Energy band diagram, Metal, Insulator and Semiconductor, Intrinsic and Extrinsic semiconductors, Direct & Indirect semiconductors (E-k diagrams), Electron and hole concentration in intrinsic semiconductors, Charge densities in semiconductor, Generation & Recombination of charge carrier, Law of mobility & conductivity, Current densities in semiconductors, Fermi levels, Mass action law, Drift & Diffusion current and Einstein relation for p-n junction. **(09 hours)**

Books Recommended

- Fundamentals of Electricity & Magnetism — Duggal & Chabbra
- Lasers Fundamentals and applications — A. K. Ghatak
- Semiconductor Physics and Devices — Donald A. Neamen
- Quantum Mechanics — N.Zettili

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/EE				
Semester	I[st]			
Name of the Course	BASIC ELECTRONICS ENGINEERING			
Course Code	BECT11	**Credits**	3	L- 2, T- 1, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	To understand the fundamentals of semiconductor Physics.
CO 2	To introduce the concepts of semiconductor devices with applications.
CO 3	To enable the students to understand the working and applications of a transistor
CO 4	To understand the basics of communication systems.

Section A

Unit-I: Semi-Conductors and Diodes:
Introduction, Insulators, Semiconductors and Metals, Mobility and Conductivity, Intrinsic and Extrinsic Semiconductors, Charge Density, Current Components in Semiconductors, Continuity Equation, Introduction, Insulators, Semiconductors and Metals, Mobility and Conductivity. PN Junction Diode- Volt ampere characteristics, Diode capacitances, Static & dynamic resistances; Types of Diodes- Zener Diode, its breakdown phenomenon and its applications, Photodiodes, LED, Varactor Diode, Tunnel Diodes, Schottky diode. **(10 hours)**

Unit-II: Diode Applications:
Rectifiers and Filter Circuit: Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier and their Analysis, LC and Pi Filters; Series and Shunt Diode Clippers, Clipping at Two Independent Levels, Clamping Operation, Clamping Circuit, Practical Clamping Circuits. **(10 hours)**

Section B

Unit-III: Bipolar Junction Transistors:
Symbol, Construction, and Characteristics of BJT, reach through phenomenon and Base width modulation, Transistor Configuration: CB, CE, CC Configuration with necessary current equations. Transistor as an amplifier and switch, Derivation related to Transistor Biasing and Bias Compensation Techniques. **(10 hours)**

Unit-IV: Basics of Communication System:
Introduction to Analog and Digital Communication Systems, Block Diagram Representation of Communication System, the Basic idea of Transmitter and Receiver used for radio communication, Various Frequency bands used for Communication, Need of Modulation and Introduction to Cellular Communication. **(10 hours)**

BOOKS RECOMMENDED:

1. Integrated Electronics by J. Millman and C.C. Halkias, McGraw Hill Education, India.
2. Electronics Devices and Circuit Theory by R. Boylestad and L. Nashelsky, Pearson India.
3. Electronics Devices and Circuits-II by U. A. Bakshi and A. P. Godse, Technical Publications.
4. Electronic principles by L. Malvino, Tata McGraw Hill Education.
5. Electronic Communication Systems by G. Kennedy, McGraw Hill Education, India.

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/ME				
Semester	I[st]			
Name of the Course	COMPUTER PROGRAMMING			
Course Code	BCST11	**Credits**	3	L- 2, T- 1, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	Understand various software development tools like algorithm, pseudo codes and flow charts for solving problems.
CO 2	Understand the use of loops and decision-making statements to solve the problems.
CO 3	Apply different operations on arrays and user-defined functions to solve real-time problems.
CO 4	Analyze the operation of pointers, structures and unions.
CO 5	Implement file operations in C programming for a given application.

Section A

Unit1-Basics of Programming & Fundamentals of C

Evolution of programming Languages, the compilation process, Object code, Source code, Executable code, Concept of Machine level, Assembly level and high-level languages, fundamentals of Algorithms, Flowcharts. Character set, Identifiers, Keywords, Data Types, Constant and Variables, Statements, Expressions, Operators, Precedence of operators, Input-Output Assignments. **(08 hours)**

Unit-2 -Decision making & Control structures

Decision making and Branching: Simple if, if-Else, nesting of if -Else, Else if ladder, Switch statement, The? operator, go to statement.

Decision making & looping: while statement, do statement, for statement, jumps in loop, break and continue, Nesting of control structures. Storage Classes: Types of storage classes, Scoping rules, Standard Library Functions, Advantages and use of various library functions (I/O functions, String, Character, Mathematics, Time and Date, functions). **(08 hours)**

Unit-3 : Array and String

Concept of array: One dimensional Array, Two- dimensional arrays, declaration and their applications, Character array and string, declaration and initialization, operations on string. **(06 hours)**

Section B

Unit-4: Function and Recursion
Concepts of user defined functions: function declaration, function definition, function call, passing parameters, call-by-value, Call by Reference, Passing Array to a function, Recursion **(08 hours)**

Unit-5: Structures and Unions
Basics of Structures, structure members, accessing structure members, declaration of unions, Pointer to structures and unions.

(06 hours)

Unit-6: Pointers and File management
Pointer variable and its importance, Pointer Arithmetic, pointer to pointer, pointers to functions, dangling pointer, dynamic memory allocation, Console input-output functions, Disk input output functions, opening closing and creating Data files.

(08 hours)

BOOKS RECOMMENDED:

1. C How to Program,7/e – PaulJ. Deitel
2. Programming With C –Byron Gottfried.
3. Programming With C-E. Balaguruswamy.
4. C The Complete Reference - Herbert Schildt.
5. Let us C-Yashwant Kanitkar.

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/EE				
Semester	**1st**			
Name of the Course	**APPLIED ENGINEERING PHYSICS LAB**			
Course Code	**BPHL11**	**Credits**	1	L-0, T-0, P-2
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO 1	Gain knowledge about the scientific methods of measuring different physical parameters based on the concepts of Physics.
CO 2	Develop experimentation skills by displaying minimized measurement errors.
CO 3	Acquire the practical skills to obtain the solutions pertaining to different physics experiments..
CO 4	Fostering a scientific temper that inspires innovation and creativity.

LIST OF EXPERIMENTS

1.	To find the co-efficient of self-induction of a coil by Anderson's Bridge using headphones.
2.	To measure the number of lines on the diffraction grating using He-Ne laser.
3.	To study the V-I characteristics of a PN-Junction diode.
4.	To find the wavelength of monochromatic light using Newton's rings apparatus.
5.	To evaluate the value of Planks's constant using a photocell.
6.	To study the voice transmission through the optical fibre and measure the numerical aperture.
7.	To find the dispersive power of a given prism using a spectrometer.
8.	To study the variation of Magnetic field by using Stewart and Gee's Tangent galvanometer.
9.	To find the resistivity of a semiconductor by four probe method at different temperatures.
10.	To find the impedance of the LCR circuit.
11.	To study the Common base/ common emitter characteristics of PNP/NPN junction transistor.

NOTE: A minimum of seven experiments are to be performed covering the diverse aspects of Engineering Physics

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch : CS/EE				
Semester	**1st**			
Name of the Course	**BASIC ELECTRONICS ENGINEERING LAB**			
Course Code	**BECL11**	**Credits**	1	L- 0 , T-0 , P-2
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO 1	Evaluate & plot the performance parameters of Half and full-wave rectifiers.
CO 2	Plot V-I characteristics of a transistor for various configurations.
CO 3	Design of basic electronic circuits using soldering techniques.
CO 4	Understand the significance of modulation index in a communication system

LIST OF PRACTICALS

1. To study the active and passive electronic components & to solder various electronic circuits on PCB.
2. To assemble various electronic circuits on Breadboard
3. To determine and plot the operating characteristics of the PN junction diode.
4. To study the characteristics of Zener diode, photodiode, Tunnel diode and LED.
5. To study Half wave and Full wave / Bridge Rectifier.
6. To study the operation characteristics (Input/Output) of the PNP/ NPN Transistor (Common Emitter/Common Base).
7. To study clipper and clamper circuits using diodes.
8. Design of self-bias circuits using BJT.
9. To find the modulation index of AM.
10. To find the demodulation of an AM and also find the modulating frequency.
11. To study the frequency response of Intermediate Frequency Transformer (IFT)

Note: Each student has to perform at least eight experiments.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/ME				
Semester	**1st**			
Name of the Course	**COMPUTER PROGRAMMING LAB**			
Course Code	**BCSL11**	**Credits**	1	L- 0, T-0 , P-2
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO 1	Understand the working of different compilers and editors for writing programs in C.
CO 2	Exercise basic syntax, operators and control statements to write C programs.
CO 3	Execute programs based on user defined functions and recursive functions.
CO 4	Implement arrays, pointers to access variables and functions.
CO 5	Write programs that perform operations using derived data types and files.

List of Experiments

1. Problem solving using computers Familiarization with programming environment.

2. Variable types and type conversions: simple computational problems using arithmetic expressions.

3. Branching and logical expressions: Problems involving if-then-else structures.

4. Loops, while and for loops: Iterative problems eg.sum of series

5. 1D Arrays: searching, sorting: 1D Array manipulation

6. 2D arrays and Strings, memory structure: Matrix problems, String Operations

7. Functions: call by value, call by reference: Simple functions

8 Recursion, structure of recursive calls: Recursive functions

9: Pointers, structures and dynamic memory allocation: Pointer sand Structures

10: File handling: File creation, writing and reading a file, File Manipulation Operations.

Note: A minimum of ten experiments is to be performed.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

COURSE SCHEME

B.Tech. 2nd SEMESTER COMPUTER SCIENCE & ENGINEERING

(Batch 2025 & Onwards)

Contact Hours/Week: 24

Course Code	Course Type	Course Title	Credits	Load Allocation			Marks Distribution					
				L	T	P	CWA	PRS	MSE	ESE	PRE	Total
BMAT21	Basic Science Course	Engineering Mathematics-II	3	2	1	0	20	-	20	60	-	100
BCHT21	Basic Science Course	Advanced Engineering Chemistry	2	1	1	0	20	-	20	60	-	100
BCET21	Engineering Science Course	Environment Sciences	3	2	1	0	20	-	20	60	-	100
BEET21	Engineering Science Course	Fundamentals of Electrical Engineering	3	2	1	0	20	-	20	60	-	100
BHST22	Humanities & Management courses	Business Communication & Professional Development	1	1	0	0	20	-	20	60	-	100
BMEL21	Engineering Science Course	Workshop Manufacturing Practices	1	0	0	3	-	40	-	-	60	100
BCHL21	Basic Science Course	Advanced Engineering Chemistry -Lab	1	0	0	2	-	40	-	-	60	100
BHSL22	Humanities & Management courses	Business Communication & Professional Development Lab	1	0	0	2	-	50	-	-	50	100
BEEL21	Engineering Science Course	Fundamentals of Electrical Engineering Lab	1	0	0	2	-	50	-	-	50	100
BCSL21	Engineering Science Course	Python Programming Lab	1.5	0	0	3	-	50	-	-	50	100
		TOTAL	**17.5**	**08**	**04**	**12**	**-**	**-**	**-**	**-**	**-**	**1000**

CWA- Class Work Assessment; PRS- Practical Sessional; MSE- Mid Sem Exam; PRE-Practical Exam; ESE- End Sem Exam

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch : CE/CSE/ECE/EE/ME				
Semester	2nd			
Name of the Course	ENGINEERING MATHEMATICS-II			
Course Code	BMAT21	**Credits**	3	L- 2 , T- 1 , P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO1	Analyse an infinite series of positive terms for convergence or divergence, and distinguish between absolute and conditional convergence.
CO2	Understand the concept and formulation of Fourier series and apply it to represent periodic functions.
CO3	Solve ordinary differential equations of first and higher order.
CO4	Formulate and solve linear and non- linear partial partial differential equations.

Section A

INFINITE SERIES

Convergence and divergence of positive term series: p-test, Comparison Test, Cauchy Root Test, D'Alembert Ratio Test, Raabe's Test, Gauss Test, Logarithmic Test. **(07 hours)**

Alternating series: Leibnitz Test for alternating series, absolute and conditional convergence. **(03 hours)**

Fourier Series: Euler's formula, sufficient conditions for a Fourier expansion, functions having points of discontinuity. Odd and even functions, Fourier expansion of periodic functions. **(04 hours)**

Half Range Fourier Series: Half range Sine Series, Half range Cosine Series. Parseval's identity, Complex form of Fourier series. **(07 hours)**

Section B

DIFFERENTIAL EQUATIONS

Ordinary Differential equations: First order and first degree, Linear and Bernoulli's differential equations, Exact and non-exact differential equations. Higher order linear differential equations: Complementary solution, particular integral and general solution of these equations. **(07 hours)**

Vcariation of parameters technique to find particular integral of second order differential equations, Cauchy_Euler and Lagrange's differential equations. **(03 hours)**

Partial Differential Equations: First order linear p.d.e, Non-Linear p.d.e. of first order, solution by Charpit's method, Four Standard forms of non-linear p.d.e with reference to Charpit's technique: f (p, q)=0, f(z, p, q)=0, f(x, p)=g(y, q) and Clauraut's form. **(04 hours)**
Homogeneous and Non-homogeneous higher order linear partial differential equations with constant coefficients, Rules for finding P.I and C.F, Non-Linear equations of 2nd order. **(07 hours)**

BOOKS RECOMMENDED:

- Advanced Engineering Mathematics — R.K. Jain, S.R.K Iyenger
- Differential Equations — G. F. Simmons
- Partial Differential Equations — M.D. Rai Singhania
- Engineering Mathematics-I — Dr. Bhopinder Singh
- Engineering Mathematics-II — Dr. Bhopinder Singh

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch : CSE/ECE/EE				
Semester	2nd			
Name of the Course	ADVANCED ENGINEERING CHEMISTRY			
Course Code	BCHT21	**Credits**	2	L- 1, T- 1, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	Know the importance of green chemistry and apply the knowledge of Drugs in day to day life.
CO 2	Summarize the different types, preparation and uses of Plastics and Paints.
CO 3	Highlight the importance of Nano particles and get acquainted with the basic knowledge of various Electrochemical Cells
CO 4	Understand the importance of colloids and the various chemical processes encountered in the water softening.

Section A

Unit – I GREEN CHEMISTRY AND DRUGS

Green Chemistry: Definition and need of Green Chemistry, Principles and applications of Green Chemistry.

Drugs: Definition, structure and applications of following drugs: -

(a) Tranquilizers (b) Antibiotics **(07hours)**

Unit – II: PLASTICS AND PAINTS

Plastics: Introduction and importance of plastics, classification of plastics, moulding constituents of plastics, moulding of plastics into articles (compression, injection, transfer and extraction mouldings).

Paints: Introduction and requisites of a good paint, properties and uses of white pigments such as white lead and lithopone. **(07hours)**

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Section B

Unit – III: NANO CHEMISTRY AND ELECTROCHEMISTRY

Nano Chemistry: Introduction and properties of nano particles, Nano materials- Graphene and fullerenes.

Electrochemistry: Electrochemical cells; Galvanic cell and its application. Mass transfer by electroplating. **(08 hours)**

Unit –IV: WATER TREATMENT

Water Treatment: Introduction, softening of water by Zeolite and ion-exchange processes, priming and foaming, sludge and scale formation, determination of hardness of water by EDTA method, Numerical on hardness and softening of water. **(08 hours)**

BOOKS RECOMMENDED	**AUTHOR**
• Engineering Chemistry	Sharma, B.K.
• Material Science and Engineering	William Callister
• An introduction to nanomaterials and nano science	A.K Das & Mahua Das

Reference Books

• Engineering Chemistry	Shashi, Chawla
• Electrochemistry	Samuel Glasstone

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE				
Semester	2nd			
Name of the Course	FUNDAMENTALS OF ELECTRICAL ENGINEERING			
Course Code	BEET21	**Credits**	3	L- 2, T- 1, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO1	The basic concepts of electric circuit terminology, Kirchhoff's and Ohm's laws.
CO2	The circuits using electrical theorems
CO3	The basic terminologies in AC and star-delta circuits
C04	The basic concepts of single phase transformer and installation of low voltage electrical components.

Section A

Unit-1

Electric Circuit Laws & Energy Sources: Basic electric circuit terminology, Ohm's law, Kirchhoff's laws, Circuit parameters (Resistance, inductance & capacitance), series & parallel combination of resistance, inductance & capacitance. ideal& practical voltage and current sources and their transformation, dependent voltage sources and dependent current sources. **(10 hours)**

Unit-2

D.C. Circuit Analysis: Power and energy relations, analysis of series parallel D.C. circuits, Mesh & Nodal methods, Star- Delta transformation, Superposition theorem, Thevenin's theorem, Norton's theorem, Maximum power transfer theorem. Reciprocity Theorem. **(12 hours)**

Section B

Unit-3

A.C. Circuit: Introduction, Average and effective values of periodic functions, instantaneous and average power, Phasor and complex number representation. Solution of sinusoidally excited R, L, C circuits, Resonance in series and parallel circuits, quality factor. Concept of 3-phase voltage and current in Wye (y), Delta circuits and their relationship. **(11 hours)**

Unit-4

Transformers and Electrical Installations: Principle operation of single-phase transformer, ideal and practical transformer (no-load & on-load phasor diagrams), equivalent circuit, losses in transformers, transformer test (open circuit & short circuit), regulation and efficiency, auto transformer. Switch Fuse Unit (SFU), MCB, ELCB, MCCB, Types of wires and cables. **(11 hours)**

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/EE/ME				
Semester	2nd			
Name of the Course	ENVIRONMENTAL SCIENCES			
Course Code	BCET21	**Credits**	3	L- 2, T- 1, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	Identify the structure , functions and significance of different ecosystems.
CO 2	Explain the natural resources, biodiversity and their conservation.
CO 3	Acknowledge the Environmental Pollution, its impacts and management.
CO 4	Educate the masses about environmental issues and their role in Environment Conservation.

Section A

Ecosystems: Structure and functions, Energy flow in the ecosystem. Food chain, food web and ecological pyramids, Ecological succession

Types of ecosystems: Forest, Grassland, Desert and Aquatic ecosystem. Biogeochemical Cycles: Carbon cycle and Nitrogen Cycle. **(10 hours)**

Natural Resources: Renewable and Non-renewable resources

Different types of resources: **Forest resources**: Use and over Exploitation, deforestation, its effects on forest and tribal people.

Land resources – use and over exploitation, soil erosion and desertification, Waste Land reclamation.

Biodiversity: Hotspots of Biodiversity in India. Threats to Biodiversity and its conservation (in-situ and ex-situ conservation). **(12 hours)**

Section B

Environmental Pollution: Definition, Cause, effects and control measures of Air, Water, noise & soil pollution, Greenhouse effect and global warming, acid rain, ozone layer depletion.

Solid waste management. Environment Protection Act (1986), Air (Prevention and Control of Pollution) Act (1981), Water (Prevention and control of Pollution) Act (1974), Wildlife Protection Act (1972) and Forest Conservation Act (1980). **(11 hours)**

Social Issues related to Environment

Ecotourism and Environmental Ethics, Ecomark and Biodegradable Plastics.

Sustainable development and Sustainable development goals (SDG's)

Environment treaties: Montreal protocol and kyoto protocol. **(11 hours)**

RECOMMENDED BOOKS:

1	Ecology and Environment	P D Sharma
2	Environmental Chemistry	B K Sharma
3	Environmental Studies	Kaushik And Kaushik
4	A Basic Course In Environmental Studies	Deswal And Deswal
5	Environmental Law	Dr. P.S. Jaswal

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory of 12 marks consisting conceptual/analytical/objective type/short answer questions, covering the entire syllabus.

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/EE				
Semester	2nd			
Name of the Course	BUSINESS COMMUNICATION & PROFESSIONAL DEVELOPMENT			
Course Code	BHST22	**Credits**	1	L- 1, T- 0, P-0
Mid Semester Examination	Max. Marks = 20		**Class Work Assessment (CWA)**	Max. Marks = 20
End Semester Examination	Max. Marks= 60		Max. Time- 3 Hrs	

COURSE OUTCOMES (COs)	
CO 1	Acquire proficiency in reading, writing, speaking & listening skills.
CO 2	Develop Negotiation, Meeting and Presentation Skills
CO 3	Learn professional development skills and interpersonal communication.
CO 4	Equip learners with basics of Life skills for a successful life.

Section A

Communication skills: Introduction, Elements of Business Communication, Barriers to Business Communication. Listening skills: Process of listening, types of listening, techniques to improve listening ability. Speaking Skills: Importance of speaking skills, components of speaking skills. **(05 hours)**

Writing Skills: Script Writing, Steps to write Scripts, Tips for writing speeches. Meeting Skills**:** purpose of meeting, types of meeting, procedure for conducting a meeting. Presentation skills: meaning, importance, types of presentation, steps in preparing a presentation. Presentation skills: Meaning, importance, types of presentation, steps in preparing a presentation. **(05 hours)**

Section B

Professional development–Introduction, Objectives of professional development, tips for professional development, Activities that contribute to professional development. Interviews**-** Meaning, Types of interviews, tips for giving an interview and handling questions. Professional Etiquette: Meaning, types and importance of Professional Etiquette. **(05 hours)**

Life Skills: -Definition and Importance of Life Skills, Life Skills Activities for personality development, Social Skills: Need of social skills in communication, types of social skills, components of social skills, Concept of hard and soft skills: Significance of hard and soft skills, five important soft skills. **(05 hours)**

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CE/CSE/ ECE				
Semester	**2nd**			
Name of the Course	**WORKSHOP MANUFACUTRING PRACTICES**			
Course Code	**BMEL21**	**Credits**	1	L- 0, T-0, P-3
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO1	Understanding different manufacturing techniques and their relative advantages/disadvantages with respect to different applications
CO2	Selection of a suitable fabrication technique for meeting a specific fabrication need.
CO3	Acquire a minimum practical skill with respect to the different methods.
CO4	Creation of simple components using different materials.

SHOP PRACTICE

Unit-1: - Carpentry

1. Middle/Cross lap joint
2. Mortise and Tenon Joint T -Joint
3. Pattern making of open bearing

Unit-II: -Foundry

1. Moulding of open bearing (Simple Pattern)
2. Moulding of Sliding Job of Bench Vice (Split piece pattern)

Unit-III: -Smithy

1. Upsetting, drawing and bending operation.

Unit-IV: -Welding

1. Preparation of Single V-Butt joint by Arc/Gas welding.
2. Preparation of Double V-Butt joint by Gas/Arc welding.
3. Corner Joint by Arc/Gas welding
4. Lap Joint by Arc/Gas welding

Unit– V: -Fitting

1. Assembly of Snap fitting of MS-Flat Pieces (Male and Female)
2. Assembly and fitting of two L-shaped Rectangular MS-Flat pieces.

Books Recommended: -

1. Workshop Technology by Hajra and Chowdhary
2. Manufacturing Technology VolI and II by Rao. P. N
3. Manufacturing Technology by Gowri. P. Hariharan and A. Suresh Babu.

Note: -A minimum of eight experiments is to be performed.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/EE				
Semester	**2nd**			
Name of the Course	**ADVANCED ENGINEERING CHEMISTRY LAB**			
Course Code	**BCHL21**	**Credits**	1	L- 0, T- 0, P-2
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO1	The course relies on quantitative analysis and makes use of simple equation to illustrate the concept involved.
CO2	Estimation of total hardness of water by EDTA complexometric method.
CO3	Analyse an overview of preparation and identification of organic compounds and detection of various elements and functional groups present in it.

LIST OF EXPERIMENTS

1.	To determine Volumetrically the number of molecules of water of crystallization present in the given sample of Mohr's salt, x gms. of which have been dissolved per litre provided N/10 $K_2Cr_2O_7$ (using an external indicator).
2.	To determine Volumetrically the percentage of Cu in a sample of $CuSO_4$ crystals, Z gms of which have been dissolved per litre, provided 0.IN $Na_2S_2O_3$.
3.	To determine the percentage of $CaCO_3$ in precipitated chalk. You are provided with IN HCI and 0.IN NaOH.
4.	To analyse the given antacid tablets.
5.	To determine the surface tension of an unknown liquid by using Stalagmometer.
6.	To prepare a pure and dry sample of Glucosazone.
7.	Determine the method of purification of organic compounds by paper chromatography.
8.	Organic Analysis: Identify the following organic compounds (preparation of at least one derivative).
9.	Determine the total hardness of a sample of water by complexometric method (using EDTA).
10.	Determine the percentage of calcium oxide in cement.

Note: - A minimum of Eight (08) experiments to be performed.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE/ECE/EE				
Semester	2nd			
Name of the Course	BUSINESS COMMUNICATION & PROFESSIONAL DEVELOPMENT LAB			
Course Code	BHSL22	**Credits**	1	L- 0, T- 0, P- 2
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO 1	Acquire proficiency in reading and writing, speaking and listening skills.
CO 2	Develop presentation, interview and interpersonal skills.

List of Experiments

Speaking skills

1. Formal & Informal Conversations
2. Presentation Skills

Interpersonal Skills

1. Interviews, Mock Interviews
2. Listening Skills

Career Building & Resume writing

1. SWOT Analysis
2. Resume Writing

Life Skills Activities

1. Life Management Skills
2. Role play

Professional Etiquette Activities

1. Meeting Etiquette
2. Workplace Etiquette

Note: Eligibility to appear in Practical Test: 8 practicals.

Test/ References Books:

1.	Electrical Engineering Fundamentals	V. Del toro
2.	Electrical Technology	H.Cotton
3.	Electrical Technology	E.Hughes
4.	Basic Electrical Engineering	A.K.Chakrabarti
5.	Basic Electrical Engineering	J.B Gupta

INSTRUCTIONS (End Semester Examinations)

The question paper shall consist of three sections (I, II & III).

Section-I will be compulsory consisting of conceptual/analytical/objective type/short type questions with maximum 12 marks, spread over the entire syllabus (both sections A & B).

Sections II & III of the question paper will have three questions each from the respective sections (A & B) of the syllabus and each question will carry 12 marks. The candidate will have to attempt four questions, from sections (II&III) selecting two from each.

Use of scientific calculators (non-programmable), steam table, standard data/ log books are permitted, wherever required.

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU
(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch : CSE/ECE				
Semester	2nd			
Name of the Course	FUNDAMENTALS OF ELECTRICAL ENGINEERING LAB			
Course Code	**BEEL21**	**Credits**	1	L- 0 , T- 0 , P-2
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO.1	Experimentally verify the basic circuit theorems
CO.2	Measure current in series-parallel RLC circuits.
CO.3	Measure load of 3 phase ac circuits connected in star and delta
CO.4	Understand the basic characteristics of single-phase transformer.

LIST OF EXPERIMENTS:

1. Verification of Kirchoff's Laws.
2. Verification of Superposition Theorem.
3. Verification of Thevinin's Theorem.
4. Verification of Norton Theorem.
5. Verification of Reciprocity Theorem.
6. Verification of Maximum Power Transfer Theorem.
7. Measurement of current in various branches of RLC series-parallel circuit.
8. Study of three-phase A.C Circuits with Star and Delta connected Load.
9. Study of single-phase transformer. Determination of polarity test of given single phase transformer.
10. To perform open and short circuit test on single phase transformer.
11. Study of wires, cables, fuses and MCBs.

Note-Minimum of seven experiments are to be performed by each student

GOVT. COLLEGE OF ENGINEERING AND TECHNOLOGY, JAMMU

(Autonomous College)

Department of Computer Science & Engineering

B. Tech Syllabus From Batch-2025 & onwards				
Branch: CSE				
Semester	**2nd**			
Name of the Course	**Python Programming Lab**			
Course Code	**BCSL21**	**Credits**	1.5	L- 0, T-0 , P-3
Practical Sessional (PRS)	Max. Marks = 40			
Practical Examination (PRE)	Max. Marks= 60			

COURSE OUTCOMES (COs)	
CO 1	Understand the structure of Python programming environment and interpret different editors and compilers used for writing Python programs.
CO 2	Exercise basic syntax, operators, data types, and control flow statements to solve computational problems in Python.
CO 3	Develop modular programs using user-defined functions and work with libraries and modules.
CO 4	Implement programs using Python data structures such as lists, tuples, sets, and dictionaries, and perform operations on files.
CO 5	Apply Python libraries such as NumPy and Pandas for data processing, analysis, and visualization.

List of Experiments

1. **Introduction to Python Programming Environment:** Problem solving using computers, familiarization with Python IDEs and interpreters, writing and executing basic scripts.
2. **Variables, Data Types, and Type Conversions:** Simple computational problems using arithmetic, relational, and logical operators; type casting and formatted output.
3. **Conditional and Looping Constructs:** Problems involving if-else structures, nested conditions, and iterative loops (for, while).
4. **Functions and Modular Programming:** Programs using user-defined functions, parameters, return values, and modules; understanding code reusability.
5. **Libraries and Modules:** Understanding and usage of built-in modules (math, date time, random etc.) and creation/import of user-defined modules.
6. **Strings, Lists, and Tuples:** Sequence operations, slicing, searching, sorting, and list comprehensions.
7. **Dictionaries and Sets:** Operations on key-value pairs, set operations (union, intersection, difference), and handling structured data.
8. **File Handling and Exception Management:** File creation, reading and writing operations, file manipulation, and error handling using try-except blocks.
9. **NumPy Operations:** Introduction to arrays, vectorized operations, slicing, reshaping, and statistical functions.
10. **Pandas and Data Visualization:** Data Frame and Series operations, importing/exporting data, data analysis, and visualization using Matplotlib.

Note: A minimum of ten experiments are to be performed.