

B. Tech. (Computer Science & Engineering)

Semester Ist

Sr.No.	Code	Name of Subject	L	P	U
1	BTCSE111	Communication Skills.	4	0	4
2	BTCSE112	Physics-I	4	0	4
3	BTCSE113	Chemistry - I	3	2	4
4	BTCSE114	Maths - I	4	0	4
5	BTCSE115	Fundamentals Of Computer	3	2	4
6	BTCSE116	Workshop	3	2	4

Semester IIInd

Sr.No.	Code	Name of Subject	L	P	U
1	BTCSE121	Physics - II	4	0	4
2	BTCSE122	Chemistry - II	3	2	4
3	BTCSE123	Maths – II	4	0	4
4	BTCSE124	Engg. Graphics	3	2	4
5	BTCSE125	Computer Programming - I	0	8	4
6	BTCSE126	Workshop Practice	3	2	4
7	BTCSE127	Engineering Mechanics			

Semester IIIrd

Sr.No.	Code	Name of Subject	L	P	U
1	BTCSE211	Digital Electronics	4	0	4
2	BTCSE212	Mechanics of Solids	4	0	4
3	BTCSE213	Data Structure & Algorithm	3	2	4
4	BTCSE214	Electrical Science - I	4	0	4
5	BTCSE215	Control System	4	0	4
6	BTCSE216	Hydraulic & Fluid Mechanics	3	2	4
7	BTCSE217	Maths - III			

Semester IVth

Sr.No.	Code	Name of Subject	L	P	U
1	BTCSE221	Optimization	4	0	4
2	BTCSE222	Analog Electronics	3	2	4
3	BTCSE223	Introduction to Auto Mobile Engg.	4	0	4
4	BTCSE224	Electrical science -II	3	2	4
5	BTCSE225	Thermodynamics			
6	BTCSE226	Fundamental of Surveying	4	0	4
7	BTCSE227	Principles of Management	3	2	4

Semester Vth

Sr.No.	Code	Name of Subject	L	P	U
1	BTCSE311	Computer Programming –II	4	0	4
2	BTCSE312	Computer Organization and Architecture	3	2	4
3	BTCSE313	Database Management System	3	2	4
4	BTCSE314	Microprocessor	3	2	4
5	BTCSE315	Discrete Structure for Computer science	4	0	4

Semester VIth

Sr.No.	Code	Name of Subject	L	P	U
1	BTCSE321	Advanced Computer Architecture	4	0	4
2	BTCSE322	Theory of Computation	3	2	4
3	BTCSE323	Computer networks	3	2	4
4	BTCSE324	Digital Communication/Oracles	4	0	4
5	BTCSE325	Programming language (Java)	4	0	4
6	BTCSE326	Practical Training for 45 Days	3	2	4

Semester VIIth

Sr.No.	Code	Name of Subject	L	P	U
1	BTCSE411	Operating system	4	0	4
2	BTCSE412	Computer Graphics	4	0	4
3	BTCSE413	Compiler Construction	4	0	4
4	BTCSE414	Software Engineering	3	2	4
5	BTCSE415	Programming Language	4	0	4

Semester VIIIth

Sr.No.	Code	Name of Subject	L	P	U
1	421	Practical Training for 6 Month a. Project b. Seminar	4	0	4

Semester 1st

Technical Report Writing (Code BTCSE111)

Grammars:

- A. Review of English grammar
 - 1. Use of articles
 - 2. Use of models
 - 3. The conjunction
 - 4. Tenses (Present, Past, Future and its further forms)
 - 5. Active/Passive voice
 - 6. Reported speech
 - 7. Subject – Verb concur

Communication Skills

- A. **Reading**
 - 1. Technique of reading with special emphasis on pronunciation
 - 2. Division of passage into different parts according to contents, thoughts, keeping in view the comprehension questions given beneath the passage.
 - 3. Practice of answering comprehensive questions.
- B. **Writing**
 - Letter writing
 - 1. Types of letters
 - 2. Writing of different types of letters (special emphasis to formal and business letters)
- C. **Essay writing/Paragraph writing**
 - 1. Practice of topics/Hit based essays
 - 2. Practice of writing essay on the given topic to augment the emanative power and knowledge.
- D. **Précis writing :**
- E. **Notice writing/Telegram writing**
 - 1. Contents of the notice
 - 2. Practice of writing different types of notice.
- G. **English language lab -**
 - 1. Holding seminars and organizing workshops on the language.
 - 2. Presentation and group

Physics (Code BTCSE112)

- 1. **Interference:** - Interference of light, theory and methods of measurement of wavelength uses Fresnel's biprism, Newton's rings, Michelson interferometer, conditions of interference.
- 2. **Diffraction:** - Fraunhofer diffraction at a single slit, theory and method of measurement of wavelength by plane transmission grating, diffraction of X – Ray, Bragg's law, resolving power, resolving power of diffraction grating.

3. **Polarization:** - Introduction, important definitions, Production of polarization, detection of circular & elliptically polarized light.
 4. **Rotational dynamics:** - Torque, Newton's second law & rotational inertia, equilibrium & non equilibrium applications of Newton's law.
 5. **Oscillation:** - Oscillating systems, S.H.M, S.H.M. oscillator, energy in S.H.M, application of S.H.M. the torsional oscillator, simple pendulum.
 6. **Wave motion:** - Mechanical wave types of waves, wave speed on a stretched string, mechanical analysis, group speed, the wave equation.
 7. **Reflection:** - Reflection from dielectric, internal reflection, phase change by reflection, metallic reflection.
- Refraction:** - Refractive index, law of refraction, graphical construction for refraction.

Chemistry (Code BTCSE113)

This is the first of a sequence of a sequence of two courses aimed at providing an integrated overview of chemistry. Topic to be discussed will include : nuclear chemistry : electronic structure of atoms : molecular structure and chemical bonding : chemical thermodynamics: phase and chemical equilibrium electrochemistry: chemical : phase and chemical equilibrium: electrochemistry: chemical kinetics

Maths (Code BTCSE114)

Functions and graphs; limit and continuity; applications of derivative and integral. Conics; polar coordinates; convergence of sequences and series. Maclaurin and Taylor series. Partial derivatives. Vector calculus in R^n ; vector analysis; theorems of Green, Gauss and Stokes.

Fundamentals of Computer (Code BTCSE115)

Introduction : Classification of computer and generation, Basic architecture of computer and its building blocks, Input devices, Computer memories.

Number System : Binary, Octal, Decimal, and Hexadecimal representation of characters :
ASCII and EBDIC codes, Binary arithmetic and logic circuit.

Classification of Computer language : Machine, Assembly and High level language, Brief
idea of operating system, Assembler, Compiler and interpreter.

Fundamentals of computer programming : Problem solving through computer algorithms
and flow chart level of programming.

Operating system : Introduction to O.S., Types of operating system, Multiprogramming,
Timesharing, Batch, Real time and UNIX

Internet : Introduction to internet, Components, Services and working on internet,
introduction to protocols, tools.

Workshop Practice (Code BTCSE116)

Study & Perform on various M/C . Conducting job work by using various M/C, Cutting
tools, equipments & hand tools i.e. files, chisels, hacksaw, right angle, marking tools
measuring tools, etc.

Semester 2nd

Engineering Graphics (Code BTCSE122)

Programming techniques, review of programming languages useful to civil engineering works, structural analysis concepts, modeling of problems, relation between elements and systems, programming with and flexibility and stiffness matrix displacement plain stress/strain problems, eigen value problems, programming for pre and post processor, civil engineering computer projects.

Workshop Practice (Code BTCSE123)

Study & Perform on various M/C . Conducting job work by using various M/C, Cutting tools, equipments & hand tools i.e. files, chisels, hacksaw, right angle, marking tools measuring tools, etc.

.Computer Programming –I (C Language) (Code BTCSE125)

- 1. Introduction :**
 - a. Scope of C Language
 - b. Distinction and similarities with other HLLs
 - c. Special features and Application areas
- 2. Elements of C**
 - a. Character Set
 - b. Key Words
 - c. Data Types
 - d. Constants and Variables
 - e. Operators unary, binary, ternary
 - f. Operator precedence
- 3. Console Input-Output**
 - a. Types of I-O
 - b. Unformatted console I-O: getchar(), Gets(), Puts(),
 - c. Formatted I-O : Scanf(), Printf()
- 4. Control Flow :**
 - a. Statements and blocks
 - b. if
 - c. Switch
 - d. Loops : For, While, Do-While
 - e. Go to and labels
- 5. Arrays :**
 - a. Basic Concepts
 - b. Memory Representation
 - c. One Dimensional Array
 - d. Two Dimensional Array
 - e. Three Dimensional Array
- 6. Functions :**

- a. Basic concept
 - b. Declaration and prototype
 - c. Calling
 - d. Arguments
7. **Pointers :**
- a. Basic Concepts
 - b. &,* operator
8. **Structure, Union and Enumerated Data Types**
- a. Basic Concepts
 - b. Declarations and Memory Map
 - c. Elements of Structures
9. **File Handling :**
- a. Types of Files
 - b. File Organization
 - c. Opening, Reading, Writing, Closing

Semester 3rd

Digital Electronics (Code BTCSE211)

Binary logic gates; logic circuits; Boolean algebra and K-map simplification; number systems and codes; arithmetic logic units; flipflops; registers and counters; introduction to microprocessors; architecture; instruction set and programming; memory and I/O interfacing; examples of system design.

Mechanics of Solids (Code BTCSE212)

Fundamental principles of mechanics; introduction of mechanics of deformable bodies; forces and moments transmitted by slender members; stress and strain; stress-strain-temperature relations; torsion; stresses and deflections due to bending; stability of equilibrium.

Data Structure & Algorithms (Code BTCSE213)

Introduction to software design principles, modularity, abstract data types, data structures and algorithms; Analysis of algorithms; Linear data structures – stacks, arrays, lists, queues and linked representations; Pre-fix, in-fix and post-fix expressions; Recursion; Set operations; Hashing and hash functions; Binary and other trees, traversal algorithms, Huffman codes; Search trees, priority queues, heaps and balanced trees; Sorting techniques; Graphs and digraphs; Algorithmic design techniques; Data structures for external storage, multi-way search and B-trees.

Electrical Science-I (Code BTCSE214)

Introduction; basic circuit elements; sources (dependent and independent); Kirchoff's current and voltage law, source representation and conversion; Network theorems; response of RL, RC and RLC circuits; diodes and its applications; transistors - BJT & FETs; amplifiers: biasing and small signal analysis; OPAMPS; Digital Logic gates; Basics of Combinational and Sequential circuits.

Control System (Code BTCSE215)

State variable characterisation of linear continuous - time and discrete - time systems, controllability, observability, stability; sampled data systems; Z transforms; non-linear systems; phase plane and describing function methods; calculus of variations; optimal control.

Hydraulics & Fluid Mechanics (Code BTCSE216)

Turbulent flow through conduits; lift and drag; pipe networks; boundary layer theory; open channel flow; uniform and varied flow; hydraulic jump; elements of sediment transport; introduction to hydrology and hydrological cycle; elements of meteorology; precipitation; mean depth of rainfall over area; evaporation, transpiration and evapotranspiration; interception and infiltration; run off and factors affecting run- off; unit hydrograph; methods of determination of run-off.

Semester 4th

Analog Electronics (Code BTCSE121)

Turbulent flow through conduits; lift and drag; pipe networks; boundary layer theory; open channel flow; uniform and varied flow; hydraulic jump; elements of sediment transport; introduction to hydrology and hydrological cycle; elements of meteorology; precipitation; mean depth of rainfall over area; evaporation, transpiration and evapotranspiration; interception and infiltration; run off and factors affecting run-off; unit hydrograph; methods of determination of run-off.

Thermodynamics (Code BTCSE124)

Concepts and laws of thermodynamics; macroscopic thermodynamic properties; application to closed and open system; microscopic approach to entropy; equations of state; thermodynamics of nonreacting mixtures

Optimization (Code BTCSE221)

Optimization of functions of one and many variables with and without constraints; Kuhn-Tucker conditions; gradient methods; linear programming; simplex based and integer programming methods; duality theory; transportation and assignment problems; dynamic programming; branch and bound methods; models of linear production systems, sequencing and scheduling, PERT, CPM

Fundamental of Surveying (Code BTCSE126)

Introduction, different types of surveying instruments, measurement of length and area, chain surveying, obstructions in chaining and its remedy, measurement of horizontal and vertical angles, height of an object, dumpy level and its application, standard bench mark, reduced level, measurement of reduced level of a point and ground, reduced level at different locations of theodolite, plane table ground for construction of road, building, pond and other structures, field tests.

Automobile Engineering-I (Code BTCSE223)

Unit I: POWER GENERATION SYSTEM

Unit II: ENGINE CONSTRUCTION

Unit III: FUEL SUPPLY SYSTEM

Unit IV: COOLING SYSTEM

Unit V: LUBRICATION SYSTEM

Electrical Science-II (Code BTCSE224)

Introduction; sinusoidal steady state analysis of circuits; Three phase circuits; magnetic circuits; Transformers; Basics of rotating machines; DC machines; synchronous machine; Induction machine.

Principles of Management (Code BTCSE227)

1. Nature and importance of management
2. Principles of management
3. Planning
4. Organizing
5. Staffing
6. Directing Supervision
7. Controlling
8. Delegation of authority

Semester 5th

Computer Programming – II (C++) (Code BTCSE311)

1. **Concept of OOP and POP.**
2. **Introduction of C++.**
3. **Elements of C++**
 - a. Character Set
 - b. Key Words
 - c. Data Types
 - d. Constants and Variables
 - e. Operators unary, binary, ternary
 - f. Operator precedence
4. **Control Flow :**
 - a. Statements and blocks
 - b. if
 - c. Switch
 - d. Loops : For, While, Do-While
5. **Arrays :**
 - a. Basic Concepts
 - b. Memory Representation
 - c. One Dimensional Array
 - d. Two Dimensional Array
 - e. Three Dimensional Array
6. **Functions :**
 - a. Basic concept
 - b. Declaration and prototype
 - c. Calling
 - d. Arguments
7. **Pointers :**
 - a. Basic Concepts
 - b. &,* operator
8. **Structure, Union and Enumerated Data Types**
Basic Concepts, reference operator, structure with array
9. **File Handling :**
 - a. Types of Files
 - b. File Organization
 - c. Opening, Reading, Writing, Closing
 - d. Text and binary file
10. **Class :** Declaration, Definition, use of scope resolution operator

Computer Organization & Architecture (Code BTCSE312)

Number systems and machine representation, Boolean algebra, combinational and synchronous sequential circuits, logic minimisation, programmable logic devices, state table and state diagrams, digital integrated circuits, asynchronous circuits, arithmetic operations

and algorithms, introduction to computer organisation and architecture, speed considerations, memory organisation, I/O design, implementation issues. The course will also consist of laboratory practice.

Data Base System (Code BTCSE313)

Introduction to data bases and management; data files and structures; File vs database, information, relationship in data model, hierarchical, relational, network models; distributed data bases; query processing and query optimization, query languages; concepts of security and protection; SQL and its component, Normalization

Microprocessor Programming & Interfacing (Code BTCSE314)

Elements of digital electronics; PC organization; 80X86 as CPU : Instruction set register set, timing diagrams, modular assembly programming using procedures & macros, assembler, linker & loader concepts; concept of interrupts: hardware interrupts, software interrupts, BIOS and DOS interrupts; disk organization: boot sector, boot partition, root directory & FAT; memory interfacing & timing diagrams; I/O interfacing; programmable I/O devices such as 8255, 8253, 8259, etc.

Discrete Structure For Computer Science (Code BTCSE315)

Introduction to discrete mathematical structures; Formal logic and predicate calculus; sets; relations and functions; proof techniques; graphs and trees; primes factorization, greatest common divisor, residues and application to cryptology; Boolean algebra; permutations, combinations and partitions; recurrence relations and generating functions; introduction to error correcting codes; formal languages and grammars, finite state machines.

Semester 6th

Advanced Computer Architecture (Code BTCSE 321)

Introduction to advanced architectures; parallel processing; pipelining and vector processing; array processing; SIMD computers and processor enhancement; performance evaluation methods, statistics and discrete math applications; modelling for evaluation of virtual memory; time sharing environments.

Theory Of Computation (Code BTCSE322)

Finite automata and regular languages – equivalences, closure properties. context free languages & push-down automata – equivalences, closure properties, concepts in parsing; turing machines; computability & decidability – universal turing machine, recursive functions, church-turing hypothesis; complexity classes – P, NP, reducibility and NP-completeness.

Computer Networks (Code BTCSE323)

Evolution of communication and computer networks, protocol layering, network reference models, multiple access protocols, local area networks, packet and circuit switching, switching fabrics, network performance analysis and simulation techniques; addressing, routing, flow and congestion control, IP protocol; Broadband Integrated Services Digital Network (B-ISDN); Asynchronous Transfer Mode (ATM) reference models; network interoperability, traffic management and quality of service in integrated network protocol design and implementation strategies

Digital Communication (Code BTCSE324)

Introduction, the modeling and characterization of information sources, algorithms for source coding and encoding of analog, output sources, information transmission through AWGN channels using digital modulation methods and BER estimation, Digital communication through band limited Gaussian noise channels; channel coding and decoding, wireless

communication channels, its characterization and modulation schemes for such channels, emerging trends in the above field.

Programming Languages (Java) (Code BTCSE325)

The Java Language

Overview – Object Oriented Programming, Abstraction, Three OOP
Principal – Encapsulation, Inheritance, Polymorphism,
Data Types - Integers (byte, short, int, long)
Floating Point – float, double
Characters, Booleans
Variables – Declaring, Initialization, Scope & Lifetime
Arrays - One-Dimensional Arrays, Multidimensional Arrays
Operators - Arithmetic Operators, The Bitwise Operators, Relational
Operators, Boolean Logical Operators, The Assignment
Operator, The ? Operator, Operator Precedence
Ctrl Statements: Selection Statements (If, switch)
Iteration Statement (while, do-while, for)
Jump Statements (break, continue, return)

More Java

Classes - Fundamentals, Declaring Objects, Assigning Object Reference
Variables, Constructors
Methods - Adding Methods, Methods Overloading, Nesting Methods
Inheritance - Defining Subclass, Subclass Constructor, Multilevel
Inheritance, Hierarchical inheritance
Packages - Putting Classes Together
Interfaces- Defining Interfaces, Extending Interfaces, Implementing
Interfaces, Accessing Interface Variables

Semester 7th

Operating System (Code BTCSE 411)

Introduction to operating systems; Various approaches to design of operating systems; Overview of hardware support for operating systems; Process management: process synchronization and mutual exclusion, interprocess communication, process scheduling; CPU scheduling approaches; Memory management: paging, segmentation, virtual memory, page replacement algorithms; File systems: design and implementation of file systems; Input/Output systems; device controllers and device drivers; Security and protection; Case studies on design and implementation of operating system modules.

Computer Graphics (Code BTCSE412)

Generation of dots, lines, arcs and polygons; color graphics, shades and levels; image transformation, windowing and clipping; 2-D and 3-D graphics; data structures, algorithms and optimization methods; case studies using GKS, CORE, etc; graphic languages and compilers.

Compiler Construction (Code BTCSE413)

Overview of programming languages concepts and constructs, programming paradigms; Introduction to compiler process, phases and passes, bootstrapping of compilers; Formal languages, grammars and abstract machines; Lexical analysis, regular expressions and finite automata; Context-free grammar and push-down automata; Recursive-descent, LL and LRparsers; Semantic analysis, attribute grammar, type checking, intermediate representation; Run-time environments; Code optimization and code generation.

Software Engineering (Code BTCSE414)

Introductory Concepts: Historical perspective, System Definition, Software Life Cycle, Software Engineering paradigms.

System analysis: Feasibility study requirement analysis, Cost benefit analysis, Planning systems, Analysis tools and techniques.

System Design: design fundamentals, Modular Design, Data and procedural design, object oriented design.

System Development: Code documentation, Program design paradigms, Efficiency Consideration.

Verification, Validation and Testing: testing methods, Formal Program Verification, Testing Strategies.

Software Maintenance: Maintenance Characteristics, Maintainability, Maintenance tasks and side effects.

Programming Language (Visual Basic) (Code BTCSE415)

INTRODUCTION TO VISUAL BASIC

User Interface, Controls, Drawing Objects on the form, Object naming conventions, Event Procedures

PROGRAMMING FUNDAMENTALS

Variables, Data Types, Modules, Procedures, Control Structures, Control Array, Arrays, Functions

MENUS, MDI AND DATA FILES

Menu Editor, Writing Code for Menu Controls, Dialog Boxes, MDI Application, Menus in MDI Applications, Adding Status Bar, toolbar, Data Files

ACCESSING DATABASES

Creating Database, Accessing Databases, Data Control, DAO, ADO
Adding bookmark, adding field, retrieve data from table using ADO data control.

REPORT/API/HELP/SYSTEM FUNCTIONS

Creating Reports – Connection, Commands, Windows API, IIS
Application, Library Functions