Paper COde	Title of the Paper	COurse Type	Marks			L-T-P	Credits
			Internal Assessment	Semester Exam	Total		
BTCSE 301	Software Engineering	ES	25	75	100	3-1-0	4
BTCSE 302	Chemistry	BS	25	75	100	3-1-0	4
BTCSE 303	Data structure & Algorithms	PC	25	75	100	3-1-0	4
BTCSE 304	Analog and Digital Electronics	ES	25	75	100	3-1-0	4
BTCSE 305	IT Workshop (Sci Lab/MATLAB)	PC	25	75	100	1-0-0	1
BTCSE 306	Humanities-I (Effective Technical **CO**mmunication)	HS	25	75	100	3-0-0	3
BTCSE 307	Software Engineering Lab	ES	25	75	100	0-0-4	2
BTCSE 308	Data structure & Algorithms Lab	PC	25	75	100	0-0-4	2
BTCSE 309	Analog and Digital Electronics Lab	ES	25	75	100	0-0-4	2
BTCSE 310	IT Workshop (Sci Lab/MATLAB) Lab	PC	25	75	100	0-0-4	2
BTCSE 311	Mathematics III	PC	25	75	100	3-1-0	4
					Total	**19-5-16**	**32**

Semester – IV

Name of the Academic Program : B.Tech.(CSE)

COurse COde: BTCSE 301
Title of the COurse: Software Engineering
L-T-P: 3-1-0

Credits: 4

(L=Lecture hours, T=Tutorial hours, P=Practical hours)

COURSE OUTCOMES (COs)

CO-1. Analyze the need of Software Process Management. **CO**mpare different process Models for Software Development.(**CO**gnitive Level: Understand)

CO-2. To provide the idea of de**CO**mposing the given problem into Analysis, Desing, Implementation, Testing and Maintenance phases. (**CO**gnitive Level: Apply)

CO-3. To provide an idea of using various process models in the software industry ac**CO**rding to given circumstances. (**CO**gnitive Level: Evaluate)

CO-4. To gain the knowledge of how Analysis, Design, Implementation, Testing and Maintenance processes are **CO**nducted in a software project.(**CO**gnitive Level: Analyze)

CO-5. To know various processes used in all the phases of the product.(**CO**gnitive Level: Create)

Mapping of COurse OutCOmes (COs) with Program OutCOmes (POs) and Program Specific OutCOmes (PSOs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1		3												1	
CO2	2		1			2		2		3		2			3
CO3					3		1				1		1		
CO4	1	3		2		1			3			1			3
CO5				3							2			2	

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Detailed Syllabus:

Unit 1.Introduction, Software Model and Process: 10 Hours
Software Crisis, Need and Definition of Software Engineering, Software Myths, Process Model: Waterfall Model, V-Model, Incremental Model, Evolutionary Model,

Unit 2.Requirement Engineering: 10 Hours

Inception, Elicitation, Elaboration, Negotiation, Specification, Validation, Requirements, Analysis & Model: Domain Analysis, Data Flow Modeling, Class-based Modeling, CRC Modeling.

Unit 3.Software Design COncepts: 10 Hours

Abstraction, Modularity, **CO**hesion, **CO**upling, Software Design: Architectural Design, Data Design: Entity Relationship Design, User Interface Design, Object Oriented Design, Web Application Design: Aesthetic Design, **CO**ntent Design, Navigation Design

Unit 4.Testing and Quality: 10 Hours

Software Testing, Verification and Validation, Test Strategy: Unit Testing, Integration Testing, System Testing, User Acceptance Testing: Alpha & Beta Testing, Internal and External View of Testing: White Box Testing, Black Box Testing, Quality **CO**ncepts, Garvin's Quality Dimension, McCall's Quality Factors, ISO 9126 Quality Factors

Unit 5.Maintenance and Software Metrics: 10 Hours

Maintenance: **CO**rrective, Perfective, Adaptive, Metrics: Size Oriented Metrics, Function Point Metrics, CK Metrics suite, Introduction to Risk Management

Reference Books:

1. R. S. Pressman, "Software Engineering – A practitioner's approach", 7th Edition, McGraw Hill Int. Ed., 1992.
2. K. K. Agarwal and Yogesh Singh, Software Engineering, New Age
3. P. Jalote, "An Integrated approach to Software Engineering", Narosa, 1991.
4. Stephen R. Schach, "Classical & Object Oriented Software Engineering", IRWIN, 1996.
5. James Peter, W Pedrycz, "Software Engineering", John Wiley & Sons

Teaching-Learning Strategies

1. Build positive and peaceful environment in the classroom.
2. Provide testing pathway for the knowledge of the subject.
3. Provide subject materials to develop and explore different perspectives.
4. En**CO**urage students for reasoning when solving problems.
5. Motivate the students to develop learning and thinking process.

Assessment methods and weightages in brief (4 to 5 sentences)

1. By taking two sessional examinations.
2. By giving assignments.
3. By **CO**nducting class tests.
4. By taking semester examination.
5. Internal assessment (25 Marks) & Semester Examination (75 Marks) &Total Marks-100.

Name of the Academic Program: B. Tech (CSE)

COurse COde: BTCSE-302

Title of the COurse: Chemistry.

L-T-P :3-1-0

Credits :4

COURSE OUTCOMES (COs)

CO-1Analyze micros**CO**pic chemistry in terms of atomic and molecular orbitals and intermolecular forces.(**CO**gnitive Level: Analyse)
CO-2Rationalize bulk properties and processes using thermodynamic **CO**nsiderations.(**CO**gnitive Level: Evaluate)
CO-3 Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectros**CO**pic techniques (**CO**gnitive Level: apply)
CO-4Rationalize periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.(**CO**gnitive Level: analyse and evaluate)
CO-5List major chemical reactions that are used in the synthesis of molecules.(**CO**gnitive Level: apply and create)

Mapping of COurse OutCOmes (COs) with Program OutCOmes (POs) and Program Specific OutCOmes (PSOs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1		1	3		2		2	1	1	2	2	1		2
CO2		1		3	2	2	1				2	2		3	2
CO3	1		2	3		2		1		1	2	2	2		2
CO4		1		3	1	2	2	1	2		2	2		3	2
CO5	2		3	3		2				1	2	2	3		2

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Detailed Syllabus:

Unit 1: 10 Hours
Atomic and molecular structure , Schrodinger equation, Particle in a box solutions and their applications for **CO**njugated molecules and nano-particles. Forms of the hydrogen atom wave functions and the plots of these functions to explore their spatial variations, Molecular orbitals of diatomic molecules and plots of the multicenter orbitals, Equations for atomic and molecular orbitals, Energy level diagrams of diatomic. Pi-molecular orbitals of butadiene and benzene and aromaticity, Crystal field theory and the energy level diagrams for transition metal ions and their magnetic properties, Band structure of solids and the role of doping on band structures

UNIT 2: 10 Hours
Spectros**CO**pic techniques and applications Principles of spectros**CO**py and selection rules, Electronic spectros**CO**py, Fluorescence and its applications in medicine, Vibrational and rotational spectros-

COpy of diatomic molecules, Applications, Nuclear magnetic resonance and magnetic resonance imaging, surface characterization techniques, Diffraction and scattering

UNIT 3: 10 Hours

Intermolecular forces and potential energy surfaces Ionic, dipolar and van Der Waals interactions, Equations of state of real gases and critical phenomena, Potential energy surfaces of H3, H2F and HCN and trajectories on these surfaces. Organic reactions and synthesis of a drug molecule : Introduction to reactions involving substitution, addition, elimination, oxidation, reduction, cyclization and ring openings, Synthesis of a **CO**mmonly used drug molecule

UNIT 4: 10 Hours

Use of free energy in chemical equilibria and Periodic properties Thermodynamic functions: energy, entropy and free energy, Estimations of entropy and free energies. Free energy and emf, Cell potentials, the Nernst equation and applications, Acid base, oxidation reduction and solubility equilibria, Water chemistry. **CO**rrosion, Use of free energy **CO**nsiderations in metallurgy through Ellingham diagrams

UNIT 5: 8 Hours

Effective nuclear charge, penetration of orbitals, variations of s, p, d and f orbital energies of atoms in the periodic table, electronic **CO**nfigurations, atomic and ionic sizes, ionization energies, electron affinity and electronegativity, polarizability, oxidation states, **CO**ordination numbers and geometries, hard soft acids and bases, molecular geometries Stereochemistry : Representations of 3 dimensional structures, structural isomers and stereoisomers, **CO**nfigurations and symmetry and chirality, enantiomers, diastereomers, optical activity, absolute **CO**nfigurations and **CO**nformational analysis. Isomerism in transitional metal **CO**mpounds (Number of Units may be decided by the School/Department/Centre)

Reference Books:

1. University chemistry, by B. H. Mahan
2. Chemistry: Principles and Applications, byM. J. SienkoandR. A. Plane
3. Fundamentals of Molecular Spectros**CO**py, by C. N. Banwell
4. Physical Chemistry, by P. W. Atkins
5. Organic Chemistry: Structure and Function by K. P. C. Volhardt and N. E. Schore,

Teaching-Learning Strategies in brief

1. Learning through discussion among the peer group
2. Learning throughCase Studies
3. Open ended questions by teacher
4. Open ended questions from student

Assessment methods and weightages in brief

A variety of assessment methods that are appropriate to the subject areaand a programme of study have been used to assess progress towards the **CO**urselearning out**CO**mes. Priority has been ac**CO**rded to formative assessment. Progress towardsachievement of learning out**CO**mes have been assessed using the following:

time-**CO**nstrainedexaminations; problem based assignmentsindividual project report (case-study reports); oral presentations, including seminarpresentation; viva voce interviews etc.

Name of the Academic Program: B. Tech (CSE)

COurse COde: BTCSE 303
Title of the COurse: Data Structure & Algorithms
L-T-P : 3-1-0
Credits : 4
(L=Lecture hours, T=Tutorial hours, P=Practical hours)

COURSE OUTCOMES (COs)

After COmpletion of this COurse, the students should be able to:
COurse outCOmes

CO-1: Demonstrate understanding of major datastructures.(**CO**gnitive level: Understand, Remember)
CO-2: Implement various searching algorithms (**CO**gnitive level: Apply)
CO-3: Implement various sorting algorithms (**CO**gnitive level: Apply)
CO-4: Demonstrate understanding of non-linear data structures and implement them (**CO**gnitive level: Create, understand)
CO-5: Analyse non-linear data structures for various operations i.e. Creation, insertion, deletion, searching(**CO**gnitive level: Analyse, Evaluate)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	1	1	2	-	-	-	-	1	3	3	2	3
CO2	2	2	2	2	1	3	-	-	2	-	-	3	3	3	3
CO3	2	2	2	2	1	3	1	-	-	-	-	3	3	3	3
CO4	1	1	1	2	1	3	-	1	-	-	1	2	3	2	2
CO5	1	1	1	2	1	3	-	-	-	3	-	2	3	2	3

Detailed Syllabus

UNIT 1: 10 Hours
Introduction: Basic Terminologies: Elementary Data Organizations, Data Structure Operations: insertion, deletion, traversal etc.; Analysis of an Algorithm, Asymptotic Notations, Time-Space trade off.
Searching: Linear Search and Binary Search Techniques and their **CO**mplexity analysis.

UNIT 2: 10 Hours
Stacks and Queues: ADT Stack and its operations: Algorithms and their **CO**mplexity analysis, Applications of Stacks: Expression **CO**nversion and evaluation– **CO**rresponding algorithms and **CO**mplexity analysis. ADT queue, Types of Queue: Simple Queue, Circular Queue, Priority Queue; Operations on each types of Queues: Algorithms and their analysis.

UNIT 3: 9 Hours
Linked Lists: Singly linked lists: Representation in memory, Algorithms of several operations: Traversing, Searching, Insertion into, Deletion from linked list; Linked representation of Stack and

Queue, Header nodes, doubly linked list: operations on it and algorithmic analysis; Circular Linked Lists: all operations their algorithms and the **CO**mplexity analysis.
Trees: Basic Tree Terminologies, Different types of Trees: Binary Tree, Threaded Binary Tree, Binary Search Tree, AVL Tree; Tree operations on each of the trees and their algorithms with **CO**mplexity analysis. Applications of Binary Trees. B Tree, B+ Tree: definitions, algorithms and analysis.

UNIT 4: 10 Hours
Sorting and Hashing: Objective and properties of different sorting algorithms: Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort; Performance and **CO**mparison among all the methods, Hashing.

UNIT 5: 8 Hours
Graph: Basic Terminologies and Representations, Graph search and traversal algorithms and **CO**mplexity analysis.

Reference books:

1. "Fundamentals of Data Structures", Illustrated Edition by Ellis Horowitz, Sartaj Sahni, **CO**mputer Science Press.
2. Algorithms, Data Structures, and Problem Solving with C++", Illustrated Edition by Mark Allen Weiss, Addison-Wesley Publishing **CO**mpany
3. "How to Solve it by **CO**mputer", 2nd Impression by R. G. Dromey, Pearson Education.

Teaching-Learning Strategies in brief (4 to 5 sentences)

1. Learning by doing
2. Open ended questions by teacher
3. Open ended questions from students
4. Preparation of question bank by students at various **CO**gnitive level

Assessment methods and weightages in brief (4 to 5 sentences)

1. problem based assignments;
2. practical assignment laboratory reports;
3. observation of practical skills;
4. time-**CO**nstrained examinations;
5. closed-book and open-book tests;

Name of the Academic Program: B. Tech (CSE)

COurse COde: BTCSE 304
Title of the COurse: Analog and Digital Electronics
L-T-P : 3-1-0
Credits : 4
(L=Lecture hours, T=Tutorial hours, P=Practical hours)

COURSE OUTCOMES (COs):

CO1: Understand the fundamental **CO**ncepts and techniques used in digital electronics, and Number **CO**nversions, Error **CO**rrection and detection, Digital logic families.(**CO**gnitive Level: Remember)

CO2: Simplify Boolean function using Boolean algebraic rules and able to minimize Boolean expressions by applying K-Map method and Tabulation Method with "don't care" **CO**nditions and laws. (**CO**gnitive Level: Apply)

CO3: To analyse and design various **CO**mbinational logic circuits.(**CO**gnitive Level: Evaluate)

CO4: Analyse basic functionalities of Latches and Flip-Flops; design of Sequential logic circuits.(**CO**gnitive Level: Analyze)

CO5: Have a understanding of the fundamental **CO**ncepts about various terms and circuits of A/D and D/A **CO**nverters(**CO**gnitive Level: Create)

Mapping of COurse OutCOmes (COs) with Program OutCOmes (POs)and Program Specific OutCOmes (PSOs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	1	1	2	-	-	-	-	1	3	3	2	3
CO2	2	2	2	2	1	3	-	-	2	-	-	3	3	3	3
CO3	2	2	2	2	1	3	1	-	-	-	-	3	3	3	3
CO4	1	1	1	2	1	3	-	1	-	-	1	2	3	2	2
CO5	1	1	1	2	1	3	-	-	-	3	-	2	3	2	3

UNIT 1: Fundamentals of Digital Systems and logic families 10 Hours

Digital signals, digital circuits, AND, OR, NOT, NAND, NOR and Exclusive-OR operations, Boolean algebra, examples of IC gates, number systems-binary, signed binary, octal hexadecimal number, binary arithmetic, one's and two's **CO**mplements arithmetic, **CO**des, error detecting and **CO**rrecting **CO**des, characteristics of digital ICs, digital logic families, TTL, Schottky TTL and CMOS logic, interfacing CMOS and TTL, Tri-state logic

UNIT 2: COmbinational Digital Circuits) 10 Hours

Standard representation for logic functions, K-map representation, simplification of logic functions using K-map, minimization of logical functions, Don't care **CO**nditions, Multiplexer, De-Multiplexer/De**CO**ders, Adders, Subtractors, BCD arithmetic, carry lookahead adder, serial adder, ALU, elementary ALU design, popular MSI chips, digital **CO**mparator, parity checker/generator, **CO**de **CO**nverters, priority en**CO**ders, de**CO**ders/drivers for display devices, Q-M method of function realization.

UNIT 3: Sequential circuits and systems **10 Hours**

A 1-bit memory, the circuit properties of Bistable latch, the clocked SR flip flop, J- K-T and D types flip flops, applications of flip flops, shift registers, applications of shift registers, serial to parallel **CO**nverter, parallel to serial **CO**nverter, ring **CO**unter, sequence generator, ripple(Asynchronous) **CO**unters, synchronous **CO**unters, **CO**unters design using flip flops, special **CO**unter IC's, asynchronous sequential **CO**unters, applications of **CO**unters.

UNIT 4: A/D and D/A COnverter **10 Hours**

Digital to analog **CO**nverters: weighted resistor/**CO**nverter, R-2R Ladder D/A **CO**nverter, specifications for D/A **CO**nverters, examples of D/A **CO**nverter ICs, sample and hold circuit, analog to digital **CO**nverters: quantization and en**CO**ding, parallel **CO**mparator A/D **CO**nverter, successive approximation A/D **CO**nverter, **CO**unting A/D **CO**nverter, dual slope A/Dc **CO**nverter, A/D **CO**nverter using voltage to frequency and voltage to time **CO**nversion, specifications of A/D **CO**nverters, example of A/D **CO**nverter ICs

UNIT 5: SemiCOnductor memories and Programmable logic devices. **10 Hours**

Memory organization and operation, expanding memory size, classification and characteristics of memories, sequential memory, read only memory (ROM), read and write memory (RAM), **CO**ntent addressable memory (CAM), charge de **CO**upled device memory (CCD), **CO**mmonly used memory chips, ROM as a PLD, Programmable logic array, Programmable array logic, **CO**mplex Programmable logic devices (CPLDS), Field Programmable Gate Array (FPGA).

Reference books:

1. R. P. Jain, "Modern Digital Electronics", McGraw Hill Education, 2009.
2. M. M. Mano, "Digital logic and **CO**mputer design", Pearson Education India, 2016.
3. A. Kumar, "Fundamentals of Digital Circuits", Prentice Hall India, 2016.

Teaching-Learning Strategies

1. Learning by doing
2. Learning through discussion among the peer group
3. Open ended questions by teacher
4. Open ended questions from students
5. Reflective Learning

Assessment methods and weightages

1. time-**CO**nstrained examinations
2. closed-book tests
3. problem based assignments
4. practical assignments and
5. viva voce interviews

Name of the Academic Program: B. Tech (CSE)

COurse COde: BTCSE 305
Title of the COurse:IT Workshop (Sci Lab/MATLAB)
L-T-P: 1-0-0
Credits: 1

COURSE OUTCOMES (COs):

CO1: Demonstrate programming in Scilab/MATLAB.(**CO**gnitive Level: Understand)
CO2: Apply simulation for the verification of mathematical functions. (**CO**gnitive Level: Apply)
CO3: Utilize main features of the MATLAB program development environment to enable their usage in the higher learning. (**CO**gnitive Level: Evaluate)
CO4: Develop simple mathematical functions/equations in Scilab. (**CO**gnitive Level: Analyze)
CO5: Synthesize simple mathematical functions and operations using plots/display in Scilab. (**CO**g-nitive Level: Create)

Mapping of COurse OutCOmes (COs) with Program OutCOmes (POs) and Program Specific OutCOmes (PSOs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	2	3	-	-	2	2	1	2	1	2	1	3	2	1
CO2	1	2	3	1	-	2	2	1	2	1	2	1	3	2	1
CO3	-	2	3	-	1	2	2	1	2	1	2	1	3	2	1
CO4	1	2	3	1	-	2	2	1	2	1	2	1	3	2	1
CO5	-	2	3	-	-	2	2	1	2	1	2	1	3	2	1

Detailed Syllabus:

UNIT 1: Introduction **9 Hours**
Basic features, Starting MATLAB, Quitting MATLAB, Creating MATLAB, Overwriting, Error, Making, **CO**ntrolling the hierarchy of operations, **CO**ntrolling the appearance of floating point, keeping track of your work, Entering multiple statements per line

UNIT 2: Mathematical functions **8 Hours**
Basics, Adding titles, axis labels, and annotations, Multiple data sets in one, Matrix, vector, **CO**lon, Array operations and Linear equations, Matrix arithmetic operations, Array arithmetic operations, Solving linear equations, Matrix inverse

UNIT 3: Introduction to programming inMATLAB **8 Hours**
M-File Scripts, M-File, Anatomy of a M-File function, Input and output arguments, Input to a script file, Output **CO**mmands, **CO**ntrol flow and operators: ‘‘if...end’’, Relational and logical, The ‘‘for...end’’ ,The ‘‘while...end’’ loop , Saving output to a , Debugging M-files

UNIT 4:SciLab Introduction **8 Hours**
Installing, help, Mailing lists, wiki and bug, Getting help from Scilab demonstrations and macros , editor ,Docking , Using , Batch processing , Creating real, Variable , **CO**mments and **CO**ntinuation ,Elementary mathematical functions ,Pre-defined mathematical variables ,Booleans , **CO**mplex numbers, Integers , Floating point integers , ans variable , Strings , Dynamic type of variables ,matrix , The **CO**lon ”:” operator , The dollar ”$” operator

UNIT 5: SciLab Programming **8 Hours**

Looping and branching, if statement, select statement, for statement, while statement, break and **CO**ntinue, Functions, Plotting, Export

Reference Books:

1. Introduction to MATLAB, 4e, Delores M. Etter, Pearson Education Inc, 2018
2. Essentials of MATLAB Programming, 3e, Stephen J. Chapman, Cengage Learning, 2018
3. Scilab, from theory to practice, Scilab: I. Fundamentals, Perrine Mathieu, Philippe Roux, 2016, ISBN: 978-2-8227-0293-5
4. Scilab by example, Dr. M. Affouf, 2012, ISBN: 978-1479203444

Teaching-Learning Strategies in brief:

1. Provide visuals, illustrations, explanations etc.
2. Provide testing pathway for the knowledge of the subject.
3. Provide subject materials to develop and explore different perspectives.
4. En**CO**urage students for reasoning when solving problems.
5. Motivate the students to develop learning and thinking process.

Assessment methods and weightages in brief:

1. Two sessional tests
2. Assignments for each unit
3. Questions during class
4. Semester examination
5. Internal assessment (25 Marks) & Semester Examination (75 Marks) &Total Marks-100.

Name of the Academic Program: B. Tech (CSE)

COurse COde: BTCSE 306
Title of the COurse: Humanities – I
L-T-P: 3-0-0
Credits: 03

COURSE OUTCOMES (COs)

CO1: To develop the skills of the students in preparing job search artefacts and negotiating their use in GDs and interviews.(**CO**gnitive Level: Remember)
CO2: To emphasize the essential aspects of effective written **CO**mmunication necessary for professional success. (**CO**gnitive Level: Apply)
CO3: To enable the students to adopt strategies for effective reading and writing skills. (**CO**gnitive Level: Evaluate)
CO4: To enable students to learn the dynamics of social **CO**mmunication and to demonstrate the ability to learn the nuances of informal **CO**mmunication. (**CO**gnitive Level: Analyze)
CO5: To empower students to carry out day to day **CO**mmunication at the workplace by adequate understanding of various types of **CO**mmunication to facilitate efficient interpersonal **CO**mmunication.(**CO**gnitive Level: Create)

Mapping of COurse OutCOme (COs) with Program OutCOmes (POs) & Program Specific OutCOmes (PSOs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1					2		2		2	2				1	2
CO2	1		2					2							
CO3				1		2		3			3	2	1		
CO4		2			3		3		1						
CO5	1	2						2			2			2	

Detailed Syllabus:

Unit-1: Information Design and Development **8 Hours**

Different kinds of technical documents, information of development life cycle, organization structures, factors affecting information and document design, strategies for organisation, information design and writing for print and online media.

Unit-2: Technical Writing, Grammar and Editing **8 Hours**

COllaborative writing, creating indexes, technical writing style and language, basic grammar, the study of advanced grammar, editing strategies to achieve appropriate technical style, introduction to advanced technical **CO**mmunication, managing technical **CO**mmunication projects, localization, writing drafts and revising.

Unit- 3: Self-Development &Assessment **8 Hours**

Self-Awareness, self-esteem, Emotional Intelligence, Decision-making, Creativity, Time management, Goals settings, career planning, perception and attitude, values and beliefs, rapid reading, self-**CO**nfidence.

Unit- 4: COmmunication and Technical Writing 8 Hours

Importance of talk in a team, **CO**nflict management, **CO**mmunication in terms, group discussions, Structuring the GD, Interviews, techniques of interviewing, preparing for an interview, kinds of questions expected at interviews, public speaking, writing reports, project proposals, brochures, minutes of meetings, event report, personality development.

Unit- 5: Ethics 8 Hours

Email etiquettes, social etiquettes, cubicle etiquettes, restaurant etiquettes, telephone etiquettes, Engineering ethics, work cultures, Interview etiquettes, meeting etiquettes, mental agility, responsibility of an engineer, personal memory.

Reference Books:

1. Adair, John. Effective **CO**mmunication. London: Pan Macmillan Ltd., 2003.
2. Hasson, Gill. Brilliant **CO**mmunication Skills. Great Britain: Pearson. Education, 2012.
3. Raman, Meenakshi & Sangeeta Sharma. Technical **CO**mmunication: Principles and Practice, 2013
4. HBR Guide to Better Business Writing by Bryan A. Garner
5. Business Writing: What Works, What Won't by Wilma Davidson

Teaching-Learning Strategies in brief:

1. Openness to experience: curious and innovative vs. cautious and **CO**nsistent
2. **CO**nscientiousness: goal-driven and detail-oriented vs. casual and careless
3. Extraversion: outgoing and enthusiastic vs. solitary and guarded
4. Agreeableness: **CO**operative and flexible vs. defiant and stubborn
5. Neuroticism: anxious and volatile vs. **CO**nfident and stable

Assessment methods and weightage in brief:

1. By taking two sessional examinations.
2. By giving assignments.
3. By **CO**nducting class tests.
4. By taking semester examination.
5. Internal assessment (25 Marks) & Semester Examination (75 Marks) &Total Marks-100.

Program: B. Tech. (COmputer Science and Engineering)

COurse COde: BTCSE 307 Title of the COurse: Software Engineering Lab

L-T-P: 0-0-2
Credits: 1
(L=Lecture hours, T=Tutorial hours, P=Practical hours)

COURSE OUTCOMES (CO)

CO1: Able to understand and describe basic **CO**ncept of UML, design, implementation of test cases and OOP (**CO**gnitive level: understand).

CO2: Able to analyze how to develop software requirements specifications for a given problem. (**CO**gnitive level: analyze).

CO3: Able to build ERD, DFD models and Class Diagram. (**CO**gnitive level: create).

CO4: Able to implement and deploy the software system (**CO**gnitive level: apply).

CO5: Able to perform tests on software system (**CO**gnitive level: evaluate).

Mapping of COurse OutCOmes (COs) with Program OutCOmes (POs)

and Program Specific OutCOmes (PSOs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	3	3	-	-	1	1	2	1	1	1	1	1	2
CO2	-	1	3	3	1	2	2	3	-	2	2	2	2	2	2
CO3	1	1	3	1	-	2	-	2	1	2	2	2	3	2	3
CO4	2	1	-	-	1	-	1	-	-	-	1	-	1	1	2
CO5	2	-	2	-	-	1	2	1	2	-	-	3	1	2	3

List of experiments

1. Write down the problem statement for a suggested system of relevance.

2. Do requirement analysis and develop Software Requirement Specification Sheet (SRS) for suggested system

3. Draw Entity Relationship Diagram (ERD) for the real project or system.

3. To perform the function-oriented diagram, draw Data Flow Diagram (DFD) Level 0, Level 1, Level 2 of suggested system.

4. To perform the user's view analysis for the suggested system: Draw Use case diagram

5. To draw the structural view diagram for the system: Draw Class diagram, Object diagram.

6. To perform the implementation view diagram: **CO**mponent diagram for the system

7. To perform the environmental view diagram: Deployment diagram for the system.

8.To perform various testing using the testing tool unit testing, integration testing for a sample **CO**de of the suggested system.

10. To Prepare time line chart/Gantt Chart/PERT Chart for selected software project.

Teaching-Learning Strategies in brief

1. Build positive environment in the Lab.
2. Provide **CO**ncrete basic and advanced knowledge of the subject
3. En**CO**urage to the students to ask more & more questions.
4. Motivate to the students to develop critical & strategic thinking.

Assessment methods and weightages in brief

1. By giving assignments.
2. By **CO**nducting quizzes.
3. By **CO**nducting viva.
4. By taking semester examination.
5. Internal assessment (25 Marks) & Semester Examination (75 Marks) &Total Marks-100.

Name of the Academic Programme:B.Tech. (CSE)

COurse COde: BTCSE 311
Title of the COurse: Mathematics III
L-T-P:3-1-0(L=Lecture hours, T=Tutorial hours, P=Practical hours)

Credits: 04

COurse OutCOmes

After **CO**mpleting this **CO**urse, the students should be able to

CO-1 Understand various **CO**ncepts of probability involving probability space and thus will be able to measure degree of certainty and uncertainty of the occurance of an event. (**CO**gnitive Level: Understand)
CO-2 Able to understand and solve examples based on discrete random variables and **CO**ntinuous random variables. (**CO**gnitive Level: Remember)
CO-3. Analyse and solve examples related to distributions in probability . (**CO**gnitive Level: Evaluate)
CO-4. Solve examples **CO**nsisting of random sequences , modes of **CO**vergence and similar topics. (**CO**gnitive Level: Analyze)
CO-5. Undertand the **CO**ncept of random process and solve problems related to random processes. (**CO**gnitive Level: Create)

Mapping of COurse OutCOmes (COs) with Program OutCOmes (POs) and Program Specific OutCOmes (PSOs)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1					2		2		2	2				1	2
CO2	1		2					2							
CO3				1		2		3			3	2	1		
CO4		2			3		3		1						
CO5	1	2						2			2			2	

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Detailed Syllabus:

UNIT I: COncepts of Probability Theory **10 Hours**
Probability space; **CO**nditional probability and Bayes theorem; **CO**mbinatorial probability and sampling models.

UNIT II: Random variables **10 Hours**
Discrete random variables,Probability mass function, probability distribution function, example random variables and distributions; **CO**ntinuous random variables, probability density function, probability distribution function

UNIT III: Distributions **10 Hours**

Joint distributions, functions of random variables, moments of random variables; **CO**nditional distribution, densities and moments; Characteristic functions of a random variable; Markov, Chebyshev and Chernoff bounds;

UNIT IV: Random Sequences **10 Hours**

Random sequences and modes of **CO**nvergence (everywhere, almost everywhere, probability, Distribution and mean square); Limit theorems; Strong and weak laws of large numbers, centralLimit theorem.

UNIT V Random process **10 Hours**

Stationary processes,Mean and **CO**variance functions, Ergodicity,Transmission of random process, Power spectral density.

Text/Reference Books:

1. H. Stark and J. Woods, ``Probability and Random Processes with Applications to Signal Processing," Third Edition, Pearson Education
2. A.Papoulis and S. Unnikrishnan Pillai, ``Probability, Random Variables and Stochastic Processes," Fourth Edition, McGraw Hill.
3. K. L. Chung, Introduction to Probability Theory with Stochastic Processes, Springer International
4. P. G. Hoel, S. C. Port and C. J. Stone, Introduction to Probability, UBS Publishers,

Teaching-Learning Strategies in brief

1. Build positive environment in the classroom.
2. Provide **CO**ncrete basic and advanced knowledge of the subject.
3. Solve problems based on the basic & advanced **CO**ncepts of the subject.
4. En**CO**urage to the students to ask more & more questions.
5. Motivate to the students to develop critical & strategic thinking

Assessment methods and weightages in brief

1. By taking two sessional examinations.
2. By giving assignments.
3. By **CO**nducting class tests.
4. By taking semester examination.
5. Internal assessment (25 Marks) & Semester Examination (75 Marks) &Total Marks-100.