



Shri Siddheshwar Devasthan, Solapur.

Shree Siddheshwar Women's College of Engineering, Solapur.

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Department of Computer Science & Engineering

Course Outcomes for all courses

Second Year(SEM III)

Course Code: BTBS301

Course Name: Engineering Mathematics-III

CO'S After completion of the course students will be able to

CO1 Solve problems related to laplace and inverse laplace transform.

CO2 Solve higher order linear D.E. and it's applications to communication systems & signal processing.

CO3 Solve parseval's identity depends on F.T.,F.sine &F.cosine transform.

CO4 Solve one dimensional heat equation and wave equation when IVP & BVP is given .

CO5 Perform contour integration of complex function in the study of electrostatic signal processing.

Course Code: BTCOC302

Course Name: Discrete Mathematics

CO'S After completion of the course students will be able to

CO1 Draw a fundamental structures, apply induction method, apply first order propositional logic to solve the example.

CO2 Understand functions and relations, construct venn diagrams for composition of given functions, model and analyze computational process and solve wording problems using analytic methods of combinatorics.

CO3 Design an eulerian path and circuits, hamiltonian path and circuits using concepts of graph theory.

CO4 Evaluate minimal spanning trees, shortest path and weight using Dijkstra's, Prim's, Kruskal's algorithms when a weighted graph is given

CO5 Express and solve number theoretic problems using algebraic properties of groups, rings, fields, boolean algebra.

Course Code: BTCOC303

Course Name: Data Structures

CO'S After completion of the course students will be able to

CO1 Understand Basic Data Structures Such As Arrays, Linked Lists, Stacks And Queues.

CO2 Understand Basic Applications Of Stacks

CO3	Understand Basic Operations Of Circular Queue
CO4	Understand Basic Terminologies Of Graph And Its Applications
CO5	Apply Algorithm For Solving Problems Using Sorting Techniques
Course Code: BTCOC304 Course Name: Computer Architecture & Organization	
CO'S	After completion of the course students will be able to
CO1	Explain the structure & function of computer system.
CO2	Solve all types of arithmetic & logical operations on integers & floating numbers.
CO3	Differentiate & explain memory organization.
CO4	Explain micro-operation & hardwired implementation
CO5	Explain input and output organization
Course Code: BTCOC305 Course Name: Elective -I(Object oriented programming in Java)	
CO'S	After completion of the course students will be able to
CO1	Understand the basic concepts and object oriented methodology in java.
CO2	Understand and use control statements in java.
CO3	Use arrays in java.
CO4	Apply concepts of inheritance and polymorphism in java.
CO5	Demonstrate skills in writing programs using exception handling techniques.
Course Code: BTCOC305 Course Name: Data Structure Lab	
CO'S	After completion of the course students will be able to
CO1	Understand the concept of dynamic memory management, data types, algorithms, big o notation.
CO2	Understand basic data structures such as arrays, linked lists, stacks and queues.
CO3	Describe the hash function and concepts of collision and its resolution methods
CO4	Solve problem involving graphs, trees.
CO5	Apply algorithm for solving problems like sorting, searching, insertion and deletion of data

Course Code: BTCOC305		Course Name: Object oriented programming in Java Lab	
CO'S	After completion of the course students will be able to		
CO1	Use the syntax and semantics of java programming language and basic concepts of oop.		
CO2	Use arithmetic, logical, relational, and string manipulation expressions to process data.		
CO3	Able to complete class definition with in the class definition, write class and instance methods including the constructor and overloaded methods		
CO4	Develop reusable programs using the concepts of inheritance, polymorphism, interfaces and packages.		
CO5	Apply the concepts of multithreading and exception handling to develop efficient and error free codes.		
Course Code: BTCOS306			
Course Name: Seminar-I			
CO'S	After completion of the course students will be able to		
CO1	Search for the needed relevant information using various reference sources and comprehend it in literature review.		
CO2	Develop audience-centered presentations which meet the objectives of the chosen topic by integrating appropriate visual aids.		
CO3	Demonstrate effective writing skills by employing the systematic techniques of academic writing, including critical analysis and evaluation etc.		
CO4	Deliver well-rehearsed and polished presentations which meet the time, content, and interactive requirements (presentation skill).		
Course Code: BTES211P			
Course Name: Field Training /Internship/Industrial training			
Evaluation			
CO'S	After completion of the course students will be able to		
CO1	Integrate theory and practice.		
CO2	Explore career alternatives prior to graduation.		
CO3	Develop work habits and attitudes necessary for job success.		
CO4	Develop communication, interpersonal and other critical skills in the job interview process.		
CO5	Learn to appreciate work and its function in the economy.		
Second Year(SEM IV)			
Course Code: BTCOC401		Course Name: Design & Analysis of Algorithms	
CO'S	After completion of the course students will be able to		

CO1	Able to argue the correctness of algorithms using inductive proofs and analyze worst-case running times of algorithms using asymptotic analysis.
CO2	Able to explain important algorithmic design paradigm divide-and-conquer and apply when an algorithmic design situation calls for it.
CO3	Able to explain important algorithmic design paradigms such as backtracking ,branch and bound and apply when an algorithmic design situation calls for it.
CO4	Able to explain important algorithmic design paradigm such as greedy algorithm
CO5	Able to explain important algorithmic designparadigm such as dynamic programming, np completeness

Course Code: BTCOC402

Course Name: Operating System

CO'S After completion of the course students will be able to

CO1	Understand the basics of operating systems like kernel, shell, types and views of operating systems
CO2	Understand and describe the various cpu scheduling algorithms with comparison of various scheduling algorithms.
CO3	Understanding synchronization, deadlock handling and solve deadlock detection problems.
CO4	Categorize the operating system's memory management techniques and understand memory management algorithms
CO5	Use disk management and disk scheduling algorithms for better utilization of external memory. recognize file system interface, protection and security mechanisms.

Course Code: BTHM403

Course Name: Basic Human Rights

CO'S After completion of the course students will be able to

CO1	To Understand The Basic Concept & Importanceof Human Values & Human Rights
CO2	To Understand The Fundamental Rights Of Economic Programme
CO3	To Understand And Know The Rights Of Migrant Workers & Human Rights
CO4	To Understand Human Rights In Indian Constitution And Law
CO5	To Understand Declaration Of Human Rights And Provisions Of India

Course Code: BTBS404

Course Name: Probability Theory & Random Processes

CO'S After completion of the course students will be able to

CO1	To understand the concepts of basic probability and random variables.
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CO2	To understand some standard distributions and apply to some problems.
CO3	To understand the relationship between 2 variables using karl pearson's correlation coefficient and spearman's rank correlation coefficient.
CO4	To understand regression analysis of 2 variables.
CO5	To understand hypothesis using the techniques of sampling.

Course Code:BTES405

Course Name: Digital Logic Design & Microprocessors

CO'S After completion of the course students will be able to

CO1 Describe boolean algebra, logic gates, number system and their conversion

CO2 Design and analyze different combinational circuit

CO3 Design and analyze sequential circuits

CO4 Describe architecture of 8086 microprocessor

CO5 Apply concept of programming o built simple program using 8086 microprocessor

Course Code: BTCOL406

Course Name: Python Programming Lab

CO'S After completion of the course students will be able to

CO1 Write, test and debug python programs

CO2 Implement conditionals and loops for python programs

CO3 Use functions and represent compound data using lists, tuples and dictionaries

CO4 Read and write data from file

Course Code: BTCOL406

Course Name:Operating System Lab

CO'S After completion of the course students will be able to

CO1 Know basic components of an operating system.

CO2 Comprehend how an operating system virtualises cpu and memory.

CO3 Discuss various scheduling and swapping policies.

CO4 Learn basic concurrent programming in c and assembly code.

CO5 Explain how a simple file system organizes data in the hard disk.

Course Code: BTCOS407		Course Name:Seminar-II	
CO'S	After completion of the course students will be able to		
CO1	Design a webpage using html		
CO2	Design a webpage using html and make the web page attractive using css		
CO3	Design a web page using html and css and make the web page interactive using javascript		
CO4	Design web page using php which handles sessions		
CO5			
Course Code:BTCOF408 Course Name:Field Training /Internship/Industrial training			
Evaluation			
CO'S	After completion of the course students will be able to		
CO1	Explore career alternatives prior to graduation.		
CO2	Integrate theory and practice.		
CO3	Learn to appreciate work and its function in the economy.		
CO4	Learn to appreciate work and its function in the economy.		
CO5	Develop work habits and attitudes necessary for job success.		
Third Year(SEM V)			
Course Code: BTCOC501		Course Name: Database Systems	
CO'S	After completion of the course students will be able to		
CO1	Explain entity relationship diagrams		
CO2	Identify and apply the sql,relational algebra and relational calculus queries		
CO3	Write and execute sql (the insert, create, update , alter etc)queries on the given databases		
CO4	Illustrate concept of functional dependencies and determine normalization.		
CO5	Explain the concept of transaction processing and elaborate the concept of concurrency control and failure recovery.		
Course Code: BTCOC502		Course Name: Theory of Computation	
CO'S	After completion of the course students will be able to		

CO1	Design finite automata machines for given problems
CO2	Analyze a given finite automata machine and find out its language
CO3	Generate the strings/sentences of a given context-free languages using its grammar
CO4	Design pushdown automata machine for given cf language(s);
CO5	Design turing machines for given any computational problem
Course Code: BTCOC503 Course Name: Software Engineering	
CO'S	After completion of the course students will be able to
CO1	Describe various software process models.
CO2	Explain software development using agile methodology.
CO3	Design the software using uml(unified modeling language) diagram.
CO4	Explain implementation issues & open source development
CO5	Explain various types of software testing & dependability properties of software.
Course Code: BTCOE504 Course Name: Elective-II(Human Computer Interaction)	
CO'S	After completion of the course students will be able to
CO1	To explain the meaning of HCI with its scope.
CO2	Apply the concept of design process and concept of usability, by using related tools and protocol.
CO3	Expain cognitive models, socio – organizational issues and stakeholders requirements and related theories and apply it to solve related problems.
CO4	The students will be able to analyze and distinguish cognitive models, socio– organizational issues and stakeholders requirements.
CO5	Discover the application of different modern systems and analyze the effect of it on society.
Course Code: BTHM505 Course Name: Elective -III(Business Communication)	
CO'S	After completion of the course students will be able to
CO1	Explain the importance and applications of oral and written communication.
CO2	Express her ideas and thoughts by using non verbal communication protocols like - gestures, postures, facial expressions and so on.
CO3	Overcome barriers of communication and communicate effectively & explain various communication styles.

CO4	Demonstrate organizational communication & interpersonal communication between groups & teams.
CO5	Communicate, negotiate, convince in international business communication considering their ethics, culture & technology.
Course Code: BTCOL506 Course Name: Database System Lab	
CO'S	After completion of the course students will be able to
CO1	Perform create, insert, delete, update, alter data in the table. also able to perform aggregate functions,create triggers and cursors
Course Code: BTCOL506 Course Name: Software Engineering Lab	
CO'S	After completion of the course students will be able to
CO1	To perform the system analysis: requirement analysis, srs. (both functional and nonfunctional requirements. for a set of 10 sample problems, from a book on software engineering by rajib mall.)
CO2	To perform the function oriented diagram: dfd and structured chart.
CO3	To perform the user's view analysis,structural view diagram, behavioral view diagram, implementation view diagram,environmental view diagram
CO4	To draw the environmental view diagram: deployment diagram.
CO5	To perform various testing using the testing tool unit testing, integration testing
Course Code: BTCOM507 Course Name: Mini Project-I	
CO'S	After completion of the course students will be able to
CO1	Identify and formulate technical problem
CO2	Solve the identified problem by applying the prerequisite knowledge
CO3	Work as an individual or in a team in the development of project
CO4	Write the mini project report with a logical and systematic approach
CO5	Communicate / present the project work in front of the peer group
Third Year(SEM VI)	
Course Code: BTCOC601 Course Name: Compiler Design	
CO'S	After completion of the course students will be able to

CO1	Explain the phases of compiler
CO2	Generate tokens using lexical analyzer
CO3	Construct parse tree using syntax analyzer when token input is given
CO4	Check whether parse tree is syntactically meaningful.
CO5	Generate intermediate code using parse tree
Course Code: BTCOC602	
Course Name: Computer Networks	
CO'S	After completion of the course students will be able to
CO1	Explain computer network basic concepts
CO2	Design different lan technologies
CO3	Explain data link layer issues
CO4	Explain network layer principles
CO5	Explain different application layer protocols
Course Code: BTCOC603	
Course Name: Machine Learning	
CO'S	After completion of the course students will be able to
CO1	Define machine learning and understand the basic theory underlying machine learning.
CO2	Understand the concepts of learning algorithms and support vector machine.
CO3	Understand multilayer network and deep neural network.
CO4	Understand different learning models.
CO5	Understand and use clustering model.
Course Code: BTCOE604	
Course Name: Elective-IV(Internet of Things)	
CO'S	After completion of the course students will be able to
CO1	List the characteristics and applications of iot in various fields
CO2	Explain the sensors and actuators used in the smart objects
CO3	Analyze various applications of IP layer

CO'S	After completion of the course students will be able to
CO1	Identify and formulate technical problem
CO2	Solve the identified problem by applying the prerequisite knowledge
CO3	Work as an individual or in a team in the development of project
CO4	Write the mini project report with a logical and systematic approach
CO5	Communicate / present the project work in front of the peer group
Course Code: BTCOF608 Course Name:Field Training/ Internship/ Industrial Training	
CO'S	After completion of the course students will be able to
CO1	Integrate theory and practice.
CO2	Explore career alternatives prior to graduation.
CO3	Develop work habits and attitudes necessary for job success.
CO4	Develop work habits and attitudes necessary for job success.
CO5	Learn to appreciate work and its function in the economy.
Final Year(SEM VII)	
Course Code: BTCOC701 Course Name: Artificial Intelligence	
CO'S	After completion of the course students will be able to
CO1	Explain meaning of ai with its scope and stages
CO2	Solve and implement problems based on space and search strategies.
CO3	Explain knowledge & resoning representation and apply it to solve related problems.
CO4	Apply probabilistic reasoning ai domain problems and game playing domain problems
CO5	Discover the nlp application and analyze impact of nlp and ai on society.
Course Code: BTCOC702 Course Name: Cloud Computing	
CO'S	After completion of the course students will be able to
CO1	Understand the concept and characteristics of cloud and virtualization
CO2	Understand the cloud computing architecture and its types.

CO3	Define the clouds for enterprise and understand the disaster recovery in the cloud and its management.
CO4	Learn different cloud application platforms.
CO5	Learn and understand the different cloud applications present in the industry.
Course Code: BTCOE703 Course Name: Elective-VI(Big Data Analytics)	
CO'S	After completion of the course students will be able to
CO1	Describe big data and its analytics in the real world
CO2	Analyze the big data framework like hadoop, apache spark to efficiently store and process big data to generate analytics
CO3	Analyzing data analysis in real world
CO4	Illustrating the applications of data analytics
CO5	Evaluating the use of modern tools and no sql database for data analysis
Course Code: BTCOE704 Course Name: Open Elective-VII(Block Chain Technology)	
CO'S	After completion of the course students will be able to
CO1	Understand the various technologies and its business use.
CO2	Analyse the block chain applications in a structure manner.
CO3	Explain the modern concepts of block chain technology systematically.
CO4	Handle the cryptocurrency.
CO5	Understand the modern currencies and its market usage
Course Code: BTCOE705 Course Name: Open Elective-VIII(Deep Learning)	
CO'S	After completion of the course students will be able to
CO1	The main objective of this course is to make students comfortable with tools and technique required in handling large dataset .
CO2	They will also uncover various deep learnings methods in NLP
CO3	Several library and dataset publicly available will be used to illustrate the application of these algorithm.
CO4	This will help students in developing skills required to gain expression of doing independent research and study.

Course Code: BTCOS708		Course Name:Project Phase-I	
CO'S	After completion of the course students will be able to		
CO1	Understand the basic concepts & broad principles of industrial projects		
CO2	Understand concepts of project and project management		
CO3	Apply the theoretical concepts to solve industrial problems with teamwork and multidisciplinary		
CO4	Implement project planning in various stages of project cycle		
CO5	Demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context		
Course Code: BTCOL707		Course Name:Artificial Intelligence & Cloud Computing Lab	
CO'S	After completion of the course students will be able to		
CO1	Understand the concept of virtualization and how this has enabled the development of cloud computing		
CO2	Understand the concept of virtualization and how this has enabled the development of cloud computing		
CO3	Understands scaling, cloud security and disaster management		
CO4	Design different applications in cloud		
CO5	Explore some important cloud computing driven commercial systems		
Final Year(SEM VIII)			
Course Code: BTCOF801		Course Name:Project Phase-II	
CO'S	After completion of the course students will be able to		
CO1	Understand the basic concepts & broad principles of industrial projects		
CO2	Understand concepts of project and project management		
CO3	Apply the theoretical concepts to solve industrial problems with teamwork and multidisciplinary approach		
CO4	Implement project planning in various stages of project cycle		
CO5	Demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context		

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Final Year(SEM VII)

Course Code: BTCOC701
Engineering

Course Name: Software

CO'S After completion of the course students will be able to

CO1 Describe various software process models.

CO2 Explain software development using agile methodology.

CO3 Design the software using uml(unified modeling language) diagram.

CO4 Explain implementation issues & open source development.

CO5 Explain various types of software testing like development testing and unit testing.

CO6 Explain dependability properties of software.

Course Code: BTCOC702
Analysis

Course Name: Big Data

CO'S After completion of the course students will be able to

CO1 Describe big data and its analytics in the real world

CO2 Analyze the big data framework like hadoop, apache spark to efficiently store and process big data to generate analytics

CO3 Analyzing data analysis in real world

CO4 Illustrating the applications of data analytics

CO5 Evaluating the use of modern tools and no sql database for data analysis

Course Code:BTCOL705
Development(LAMP/MEAN)

Course Name:Full Stack

CO'S After completion of the course students will be able to

CO1	Describe big data and its analytics in the real world
CO2	Analyze the big data framework like hadoop, apache spark to efficiently store and process big data to generate analytics
CO3	Analyzing data analysis in real world
CO4	Illustrating the applications of data analytics
CO5	Evaluating the use of modern tools and no sql database for data analysis

Course Code: BTCOL706		Course Name: System Administration	
CO'S	After completion of the course students will be able to		
CO1	Understand the role and responsibilities of a unix system administrator install and configure the linux operating system		
CO2	Manage the resources and security of a computer running linux at a basic level		
CO3	Make effective use of unix utilities, and scripting languages		
CO4	Configure and manage simple tcp/ip network services on a linux system		

Final Year(SEM VIII)			
Course Code: BTCOE801		Course Name: Social Networks	
CO'S	After completion of the course students will be able to		
CO1	Analyze and design classical encryption techniques and block ciphers.		
CO2	Understand and analyze data encryption standard.		
CO3	To understand modular theorems & key management and distribution schemes and design user authentication		
CO4	Analyze and design hash and mac algorithms, and digital signatures & design network application security schemes, such as pgp, s/ mime, ipsec, ssl, tls,		
CO5	Https, ssh, etc. know about intruders and intruder detection mechanisms, types of malicious software,		

Course Code: BTCOE802		Course Name: Cryptography and Network Security	
CO'S	After completion of the course students will be able to		
CO1	Analyze and design classical encryption techniques and block ciphers.		
CO2	Understand and analyze data encryption standard.		
CO3	To understand modular theorems & key management and distribution schemes and design user authentication		
CO4	Analyze and design hash and mac algorithms, and digital signatures & design network application security schemes, such as pgp, s/ mime, ipsec, ssl, tls,		
CO5	Https, ssh, etc. know about intruders and intruder detection mechanisms, types of malicious software,		

Course Code: BTCOE803		Course Name:Project Phase-II	
CO'S	After completion of the course students will be able to		
CO1	Understand the basic concepts & broad principles of industrial projects		
CO2	Understand concepts of project and project management		
CO3	Apply the theoretical concepts to solve industrial problems with teamwork and multidisciplinary approach		
CO4	Implement project planning in various stages of project cycle		
CO5	Demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context		