DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Course outcomes 2022 scheme

1)Course Name: Mathematics for Computer Science- BCS301

C201.1	Explain the basic concepts of probability, random variables, probability distribution
C201.2	Apply suitable probability distribution models for the given scenario.
C201.3	Apply the notion of a discrete-time Markov chain and n-step transition probabilities to solve the given problem.
C201.4	Use statistical methodology and tools in the engineering problem-solving process.
C201.5	Compute the confidence intervals for the mean of the population.
C201.6	Apply the ANOVA test related to engineering problems.

2)Course Name: Digital Design and Computer Organization (BCS302)

C202.1	Apply the K–Map techniques to simplify various Boolean expressions.
C202.2	Design different types of combinational and sequential circuits along with Verilog programs.
C202.3	Describe the fundamentals of machine instructions, addressing modes and Processor performance.
C202.4	Explain the approaches involved in achieving communication between processor and I/O devices.
C202.5	Analyze internal Organization of Memory and Impact of cache/Pipelining on Processor Performance

3)Course Name: OPERATING SYSTEMS(BCS303)

C203.1	Explain the structure and functionality of operating system
C203.2	Apply appropriate CPU scheduling algorithms for the given problem.
C203.3	Analyse the various techniques for process synchronization and deadlock handling.
C203.4	Apply the various techniques for memory management
C203.5	Explain file and secondary storage management strategies.
C203.5	Describe the need for information protection mechanisms

4)Course Name: DATA STRUCTURES AND APPLICATIONS (BCS304)

C204.1	Explain different data structures and their applications.
C204.2	Apply Arrays, Stacks and Queue data structures to solve the given problems.
C204.3	Use the concept of linked list in problem solving.
C204.4	Develop solutions using trees and graphs to model the real-world problem. C.
C204.5	Explain the advanced Data Structures concepts such as Hashing Techniques and Optimal Binary Search Trees.

5)Course Name: DATA STRUCTURES LABORATORY SEMESTER (BCSL305 C)

C205.1	Analyze various linear and non-linear data structures
C205.2	Demonstrate the working nature of different types of data structures and their applications
C205.3	Use appropriate searching and sorting algorithms for the give scenario.
C205.4	Apply the appropriate data structure for solving real world problems

6)Course Name: OBJECT ORIENTED PROGRAMMING with C++ (BCS306B)

C206.1	Illustrate the basic concepts of object-oriented programming.
C206.2	Design appropriate classes for the given real-world scenario.
C206.3	Apply the knowledge of compile-time / run-time polymorphism to solve the given problem
C206.4	Use the knowledge of inheritance for developing optimized solutions
C206.5	Apply the concepts of templates and exception handling for the given problem
C206.6	Use the concepts of input output streams for file operations

7)Course Name -Social Connect & Responsibility (BSCK307)

C207.1	Communicate and connect to the surrounding.
C207.2	Create a responsible connection with the society.
C207.3	Involve in the community in general in which th
C207.4	Notice the needs and problems of the community and involve them in problem –solving.
C207.5	Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
C207.6	Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

8) Course Name: Data Analytics with Excel Semester –(BCS358A)

C208.1	Use advanced functions and productivity tools to assist in developing worksheets
C208.2	Manipulate data lists using Outline and PivotTables.
C208.3	Use Consolidation to summarise and report results from multiple worksheets.
C208.4	Apply Macros and Autofilter to solve the given real-world scenario.

9)Course Name: Analysis & Design of Algorithms (BCS401)

C209.1	Apply asymptotic notational method to analyze the performance of the algorithms in terms of time complexity
C209.2	Demonstrate divide & conquer approaches and decrease & conquer approaches to solve computational problems.
C209.3	Make use of transform & conquer and dynamic programming design approaches to solve the given real world or complex computational problems
C209.4	Apply greedy and input enhancement methods to solve graph & string based computational problems.
C209.5	Analyse various classes (P,NP and NP Complete) of problems
C209.6	Illustrate backtracking, branch & bound and approximation methods.

10)Course Name: MICROCONTROLLERS (BCS402)

C210.1	Explain the ARM Architectural features and Instructions.
C210.2	Develop programs using ARM instruction set for an ARM Microcontroller
C210.3	Explain C-Compiler Optimizations and portability issues in ARM Microcontroller.
C210.4	Apply the concepts of Exceptions and Interrupt handling mechanisms in developing applications.
C210.5	Demonstrate the role of Cache management and Firmware in Microcontrollers.

11)Course Name: DATABASE MANAGEMENT SYSTEM (BCS403)

C211.1	Describe the basic elements of a relational database management system
C211.2	Design entity relationship for the given scenario.
C211.3	Apply various Structured Query Language (SQL) statements for database manipulation.
C211.4	Analyse various normalization forms for the given application.
C211.5	Develop database applications for the given real-world problem.
C211.6	Understand the concepts related to NoSQL databases.

12)Course Name: Analysis & Design of Algorithms Lab (BCSL404)

C212.1	Develop programs to solve computational problems using suitable algorithm design strategy.
C212.2	Compare algorithm design strategies by developing equivalent programs and observing running times for analysis (Empirical).
C212.3	Make use of suitable integrated development tools to develop programs
C212.4	Choose appropriate algorithm design techniques to develop solution to the computational and complex problems.
C212.5	Demonstrate and present the development of program, its execution and running time(s) and record the results/inferences.

13)Course Name: GRAPH THEORY (BCS405B)

C213.1	Explain the fundamental concepts of properties and representation of graphs.
C213.2	Solve the problems involving characterization and operations on graphs.
C213.3	Apply concepts of trees and graph connectivity to solve real world problems.
C213.4	Apply the concepts of planar graph and graph representations to solve the given problem
C213.5	Use the concepts of matching and coloring of graphs to solve the real world problems.

13)Course Name: Capacity Planning for IT (BCS456B)

C214.1	Identify the requirement and measurements for capacity planning by considering the goal, issues, and processes.
C214.2	Explain capacity measurement and monitoring.
C214.3	Make use of measurement data for prediction towards overall planning process.
C214.4	Explain the concepts related to deployment, installation, configuration, and management.
C214.5	Demonstrate how the virtualization and cloud services fit into a capacity plan.

14)COURSE Name: BIOLOGY FOR ENGINEERS(BBOC407)

C215.1	Elucidate the basic biological concepts via relevant industrial applications and case studies.
C215.2	Evaluate the principles of design and development, for exploring novel bioengineering projects
C215.3	Corroborate the concepts of biomimetics for specific requirements.
C215.4	Think critically towards exploring innovative biobased solutions for socially relevant problems.

15) Course Name: Universal Human Values (BUHV408)

C216.1	They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
C216.2	They would have better critical ability
C216.3	They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
C216.4	It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction

16)Course Name: Software Engineering & Project Management (BCS501)

C301.1	Differentiate process models to judge which process model has to be adopted for the given scenarios.
C301.2	Derive both functional and nonfunctional requirements from the case study.
C301.3	Analyze the importance of various software testing methods and agile methodology.
C301.4	Illustrate the role of project planning and quality management in software development.
C301.5	Identify appropriate techniques to enhance software quality.

17)Course Name: Computer Networks (BCS502)

C302.1	Explain the fundamentals of computer networks.
C302.2	Apply the concepts of computer networks to demonstrate the working of various layers and protocols in communication network.
C302.3	Analyze the principles of protocol layering in modern communication systems.
C302.4	Demonstrate various Routing protocols and their services using tools such as Cisco packet tracer.

19)Course Name: THEORY OF COMPUTATION(BCS503)

C303.1	Apply the fundamentals of automata theory to write DFA, NFA, Epsilon-NFA and conversion between them.
C303.2	Prove the properties of regular languages using regular expressions
C303.3	Design context-free grammars (CFGs) and pushdown automata (PDAs) for formal languages.
C303.4	Design Turing machines to solve the computational problems.
C303.5	Explain the concepts of decidability and undecidability.

20)Course Name: Web Technology Lab(BCSL504)

C304.1	Design the experiment for the given problem using HTML, Javascript and CSS.
C304.2	Develop the solution for the given real-world problem using jQuery, Ajax and PHP.
C304.3	Analyze the results and produce substantial written documentation.

21)Course Name: ARTIFICIAL INTELLIGENCE (BCS515B)

C305.1	Explain the architecture and components of intelligent agents, including their interaction with the AI environment.
C305.2	Apply problem-solving agents and various search strategies to solve a given problem.
C305.3	Illustrate logical reasoning and knowledge representation using propositional and first-order logic.
C305.4	Demonstrate proficiency in representing knowledge and solving problems using first-order logic.
C305.5	Describe classical planning in the context of artificial intelligence, including its goals, constraints, and applications in problem-solving.

22)Course Name: CLOUD COMPUTING (BCS601)

C310.1	Describe various cloud computing platforms and service providers.
C310.2	Illustrate the significance of various types of virtualization.
C310.3	Identify the architecture, delivery models and industrial platforms for cloud computing based applications.
C310.4	Analyze the role of security aspects in cloud computing.
	Demonstrate cloud applications in various fields using suitable cloud platforms

23)Course Name: MACHINE LEARNING (BCS602)

C311.1	Describe the machine learning techniques, their types and data analysis framework.
C311.2	Apply mathematical concepts for feature engineering and perform dimensionality reduction to enhance model performance.
C311.3	Develop similarity-based learning models and regression models for solving classification and prediction tasks.
C311.4	Build probabilistic learning models and design neural network models using perceptrons and multilayer architectures
C311.5	Utilize clustering algorithms to identify patterns in data and implement reinforcement learning techniques

24) Course Name: ADVANCED JAVA (BCS613D)

C312.1	Apply appropriate collection class/interface to solve the given problem
C312.2	Demonstrate the concepts of String operations in Java
C312.3	Apply the concepts of Swings to build Java applications
C312.4	Develop web-based applications using Java servlets and JSP
C312.5	Use JDBC to build database applications

25) Course Name: TOSCA – Automated Software testing (BIS657A)

C313.1	Explain of Tosca's architecture, key features and fundamentals of the Tosca automation tool.
C313.2	Develop test scenarios that can be run automatically.
C313.3	Construct test cases and modules in the Tosca automation tool.
C313.4	Design Test Suits and run tests in different browsers.

26)Course Name: Machine Learning lab (BCSL606)

C314.1	Illustrate the principles of multivariate data and apply dimensionality reduction techniques
C314.2	Demonstrate similarity-based learning methods and perform regression analysis.
C314.3	Develop decision trees for classification and regression problems, and Bayesian models for probabilistic learning.
C314.4	Implement the clustering algorithms to share computing resources.

27)Course Name: INDIAN KNOWLEDGE SYSTEMS(BIKS609)

C315.1	Provide an overview of the concept of the Indian Knowledge System and its importance.
C315.2	Appreciate the need and importance of protecting traditional knowledge.
C315.3	Recognize the relevance of Traditional knowledge in different domains.
C315.4	Establish the significance of Indian Knowledge systems in the contemporary world