Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.su.ac.in

School of Engineering and Technology

Master of Application (Computer Science & Engineering)

Program Outcomes, Program Specific Outcomes & Course Outcomes
(POs, PSOs & COs)

Program Outcomes

Program Outcome		Statement
PO 1	Fundamental Engineering Knowledge	Utilize a strong foundation in mathematics, science, and engineering principles to analyze and solve complex engineering problems effectively.
PO 2	Critical Problem Solving	Identify, model, and solve challenging engineering problems by applying analytical methods, scientific principles, and engineering techniques to arrive at optimal solutions.
PO 3	Solution Design and Development	Design innovative and effective solutions for complex engineering challenges, considering factors such as safety, public health, and cultural, environmental, and societal implications.
PO 4	Investigative Research	Apply scientific methods, including experimental design, data collection, analysis, and synthesis, to conduct investigations and draw valid, research-based conclusions for complex engineering problems.
PO 5	Advanced Tool Application	Select and apply modern engineering and IT tools, including software for modeling, simulation, and prediction, to solve complex engineering problems while understanding the limitations and scope of these tools.
PO 6	Ethical and Societal Awareness	Evaluate and address societal, ethical, health, legal, and cultural issues related to engineering practice, ensuring that solutions contribute positively to both society and the profession.
PO 7	Sustainable Engineering Practice	Assess the environmental and societal impact of engineering solutions and implement sustainable practices to support long-term ecological balance and development.
PO 8	Professional and Ethical Responsibility	Commit to and practice ethical behavior in all engineering activities, adhering to professional standards and societal expectations to promote integrity in the engineering profession.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

PO 9	Collaborative and Independent Work:	Function both independently and collaboratively, contributing as an effective team member or leader in multidisciplinary environments, adapting to diverse roles and responsibilities.
PO 10	Effective Communication	Develop strong communication skills, enabling the clear and effective presentation of technical information through reports, documentation, and presentations to both technical and non-technical audiences.
PO 11	Project and Financial Management	Apply engineering and management principles to plan, manage, and lead projects efficiently, considering factors such as time, cost, and resources in both individual and team-based environments.
PO 12	Commitment to Lifelong Learning	Recognize the importance of continuous professional development and engage in lifelong learning, staying updated with the latest technologies, research, and trends in the engineering field.

Program Specific Outcomes (PSOs)

Program Specific Outcome	Statement
PSO 1	To develop proficiency in designing, implementing, and testing software applications using modern programming languages, frameworks, and tools to address complex computational problems.
PSO 2	To equip students with advanced knowledge of computer networks, protocols, and cybersecurity, enabling them to design secure, scalable, and efficient networked systems.
PSO 3	To provide expertise in database management, data structures, and data analysis, empowering students to design efficient data-driven applications for real-world business and scientific solutions.
PSO 4	To explore emerging technologies such as Artificial Intelligence, Machine Learning, Cloud Computing, and Big Data, preparing students to innovate and apply these technologies in various domains.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course Outcomes (COs)

1st Semester

Course: JAVA

Course Outcomes	Statement
CO 1	Understand Java basics: JVM architecture, JDK & JRE, and essential Java components.
CO 2	Apply object-oriented features like classes, inheritance, interfaces, and exception handling.
CO 3	Develop skills in Java I/O operations and understand the applet life cycle.
CO 4	Design graphical user interfaces (GUIs) using AWT components and event handling.
CO 5	Understand Java libraries for common tasks such as data manipulation, file handling, and utilities.

Course: Advanced Database Management System

Course Outcomes	Statement
CO 1	Learn PL/SQL basics and control structures for creating database queries.
CO 2	Implement PL/SQL procedures, triggers, and packages for managing data.
CO 3	Understand distributed database systems, including data fragmentation and replication.
CO 4	Learn parallel databases and techniques for optimizing database performance.
CO 5	Understand object-oriented databases and the use of complex data types.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Advanced Design & Analysis of Algorithms

Course Outcomes	Statement
CO 1	Analyze algorithm complexity and design efficient sorting and searching algorithms.
CO 2	Apply dynamic programming and greedy techniques to solve optimization problems.
CO 3	Implement graph algorithms such as minimum spanning trees and shortest path algorithms.
CO 4	Understand NP-completeness and explore approximation algorithms.
CO 5	Develop the ability to design and analyze complex algorithms and their efficiencies.

Course: Network Fundamentals

Course Outcomes	Statement
CO 1	Understand computer networks, their components, and data communication fundamentals.
CO 2	Learn the duties of physical, data link, and network layers in network protocols.
CO 3	Explore the transport layer's role in managing data flow and network congestion.
CO 4	Study wireless technologies and their impact on modern networks.
CO 5	Analyze the functionality of various application layer protocols, including DNS and HTTP.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Mobile Computing

Course Outcomes	Statement
CO 1	Understand GSM architecture and the basic principles of mobile communication systems.
CO 2	Learn wireless medium access control techniques like TDMA, FDMA, and CDMA.
CO 3	Explore mobile IP and mobile data communication technologies.
CO 4	Understand mobile transport layer protocols, including TCP optimizations for mobility.
CO 5	Study global mobile satellite systems and 3G technologies in mobile computing.

Course: Theory of Computation

Course Outcomes	Statement
CO 1	Understand finite automata and their properties, including DFA, NDFA, and minimization techniques.
CO 2	Learn about formal languages, regular sets, and regular expressions.
CO 3	Explore context-free languages, pushdown automata, and grammar simplifications.
CO 4	Study Turing machines, halting problems, and computational theory.
CO 5	Learn the basics of NP-completeness and its implications for computational complexity.

School of Engineering and Technology ★ Shobhit University Gangoh ★

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Optimization Techniques

Course Outcomes	Statement
CO 1	Understand linear programming and methods for solving LPPs.
CO 2	Learn the Simplex method and its application to both maximization and minimization problems.
CO 3	Study duality in linear programming and its practical implications.
CO 4	Explore transportation problems and their solution methods.
CO 5	Apply queueing theory and game theory in optimization problems.

Course: Elements of Statistics

Course Outcomes	Statement
CO 1	Understand basic statistics concepts and index numbers.
CO 2	Learn about census, sampling, and sampling errors in statistical analysis.
CO 3	Study the collection, tabulation, and presentation of data.
CO 4	Analyze measures of central tendency and dispersion in data.
CO 5	Learn diagrammatic and graphical techniques to represent statistical data.

Course: Combinatorial Optimization

Course Outcomes	Statement
CO 1	Formulate real-world problems as linear and integer programs.
CO 2	Study the geometry of polyhedra and solutions to linear programming problems.
CO 3	Understand duality and its applications in optimization.
CO 4	Apply primal-dual methods to combinatorial optimization problems.
CO 5	Explore various optimization techniques like dynamic programming and genetic algorithms.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Multi-objective Optimization

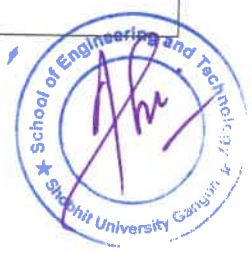
Course Outcomes	Statement
CO 1	Understand fundamentals of multi-objective optimization techniques
CO 2	Apply mathematical models to solve multi-objective problems
CO 3	Analyze trade-offs among conflicting objectives
CO 4	Implement optimization algorithms using computational tools
CO 5	Evaluate performance of solutions using appropriate metrics

Course: Biostatistics

Course Outcomes	Statement
CO 1	Understand basic concepts of biostatistics and data types
CO 2	Apply statistical methods to analyze biological data
CO 3	Use probability distributions and hypothesis testing in research
CO 4	Interpret results using statistical software tools
CO 5	Evaluate and validate data-driven conclusions in life sciences

Course: Data Warehousing and Data Mining

Course Outcomes	Statement
CO 1	Understand concepts of data warehousing and its architecture
CO 2	Apply data mining techniques to extract useful patterns from large datasets
CO 3	Implement and evaluate clustering, classification, and association algorithms
CO 4	Use data warehousing tools for effective data storage and retrieval
CO 5	Analyze real-world data for decision-making and business intelligence



Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: JAVA Lab

Course Outcomes	Statement
CO 1	Develop Java applications using object-oriented programming principles
CO 2	Implement Java data structures and algorithms in practical scenarios
CO 3	Apply exception handling and multi-threading concepts in Java
CO 4	Design and build user interfaces using Java Swing or JavaFX
CO 5	Integrate Java with databases using JDBC for real-world applications

Course: Advanced DBMS Lab

Course Outcomes	Statement
CO 1	Implement advanced database models and architectures
CO 2	Design and optimize complex queries using SQL and NoSQL
CO 3	Apply database normalization and indexing techniques
CO 4	Develop and manage transactions and concurrency control
CO 5	Integrate database systems with applications using APIs and tools

Course: Design and analysis of Algorithm lab

Course Outcomes	Statement
CO 1	Implement and test various algorithm design techniques
CO 2	Analyze time and space complexity of algorithms
CO 3	Apply divide-and-conquer, dynamic programming, and greedy algorithms
CO 4	Solve computational problems using efficient algorithms
CO 5	Evaluate and compare algorithmic solutions for optimization

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course Outcomes (COs)
2nd Semester

Course: Software Engineering & Project Management

Course Outcomes	Statement
CO 1	Understanding software engineering principles and the importance of project management.
CO 2	Familiarity with different software development life cycle models and their applications.
CO 3	Skills to conduct software requirement analysis and estimation techniques like Function Point and COCOMO.
CO 4	Ability to create project plans, manage scope, and break down work into manageable structures.
CO 5	Knowledge of quality management techniques, risk management, and software maintenance.

Course: ASP.Net

Course Outcomes	Statement
CO 1	Proficiency in building dynamic web applications using ASP.NET and understanding its architecture.
CO 2	Understanding of ADO.NET and XML for database interaction and data handling.
CO 3	Ability to create and manage ASP.NET applications with features like error handling and security.
CO 4	Knowledge of web services and various state management techniques.
CO 5	Mastery in creating custom controls and validating forms within ASP.NET applications.

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Python

Course Outcomes	Statement
CO 1	Mastery of Python syntax, operators, and control flow structures.
CO 2	Ability to define and manage functions, modules, and arguments efficiently.
CO 3	Strong grasp of Python data structures like lists, dictionaries, and tuples, along with exception handling.
CO 4	In-depth knowledge of object-oriented programming (OOP) concepts in Python.
CO 5	Skills in data science and visualization using Python, including operations on Data Frames and plotting graphs.

Course: Artificial Intelligence

Course Outcomes	Statement
CO 1	Understanding the fundamentals of AI problems, intelligent behavior, and philosophical issues in AI.
CO 2	Ability to apply basic and advanced search strategies for problem-solving in AI.
CO 3	Knowledge of knowledge representation techniques such as logic, semantic networks, and frames.
CO 4	Ability to reason under uncertainty using probability, Bayesian networks, and decision theory.
CO 5	Proficiency in working with intelligent agents, including game theory and expert systems.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Distributed Operating System

Course Outcomes	Statement
CO 1	Understanding the concepts and evolution of distributed computing and operating systems.
CO 2	Proficiency in message passing and remote procedure calls (RPC) in distributed systems.
CO 3	Knowledge of Distributed Shared Memory (DSM) systems and synchronization techniques.
CO 4	Ability to design and manage resources using global scheduling algorithms and load balancing.
CO 5	Familiarity with distributed file systems, including file access, replication, and fault tolerance.

Course: Cloud Computing

Course Outcomes	Statement
CO 1	Understanding cloud architecture, models, and the NIST Cloud Computing Reference Architecture.
CO 2	Mastery of virtualization techniques and their implementation in cloud systems.
CO 3	Ability to design and manage cloud infrastructure for computing and storage resources.
CO 4	Knowledge of programming models and cloud platforms like MapReduce, Hadoop, and Google App Engine.
CO 5	Proficiency in managing cloud security, including identity management, data security, and access control.

School of Engineering and Technology ★ Shobhit University Gangoh ★

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Digital Electronics

Course Outcomes	Statement
CO 1	Understand binary, octal, decimal, and hexadecimal number systems and their conversions.
CO 2	Learn binary codes (BCD, Excess-3, Gray, ASCII, EBCDIC) and their advantages/disadvantages.
CO 3	Master binary arithmetic, including addition, subtraction, and multiplication/division using complements.
CO 4	Gain skills in Boolean algebra and simplification of logic expressions using Karnaugh maps.
CO 5	Understand the architecture of the 8086 microprocessor, its instruction set, and addressing modes.

Course: Business Communication

Course Outcomes	Statement
CO 1	Develop business vocabulary and practice writing notices, agendas, and minutes.
CO 2	Improve writing skills in business memos, reports, proposals, and letters.
CO 3	Enhance communication in cross-cultural contexts and through negotiation/persuasion techniques.
CO 4	Master formal letter writing, including types like enquiry, complaint, and apology letters.
CO 5	Learn the structure and writing styles for different types of reports (analytical, informational, and project).

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Research Methodologies

Course Outcomes	Statement
CO 1	Learn the fundamentals of research, including problem identification, hypothesis formulation, and the research process.
CO 2	Understand different research designs and their applications, such as exploratory, descriptive, and experimental.
CO 3	Get familiar with qualitative and quantitative research methods and their integration.
CO 4	Focus on measurement validity and reliability across different levels (nominal, ordinal, interval, ratio).
CO 5	Apply hypothesis testing and develop the skills to write effective research findings.

Course: Cognitive Analytics and Social Skills for Professional Development

Course Outcomes	Statement
CO 1	Develop self-awareness and communication skills (assertiveness, creativity, and problem-solving).
CO 2	Understand emotional intelligence and its relevance to workplace relationships and team dynamics.
CO 3	Learn leadership styles and team management techniques, including time management and work-life balance.
CO 4	Study conflict resolution and negotiation techniques to manage workplace challenges.
CO 5	Explore values and ethics in professional development, focusing on personal and social responsibility.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Data Analytics and Decision Making

Course Outcomes	Statement
CO 1	Learn the basics of data analytics, including data collection, visualization, and statistical tools.
CO 2	Understand data processing and cleaning techniques for preparing high-quality datasets.
CO 3	Master statistical analysis methods such as descriptive statistics, hypothesis testing, and probability distributions.
CO 4	Explore predictive analytics and machine learning techniques to analyze trends and make informed decisions.
CO 5	Develop decision-making models using tools like decision trees and optimization strategies.

Course: Embedded Systems

Course Outcomes	Statement
CO 1	Understand the evolution of computers and basics of processor types (Microcontroller, ASSPs).
CO 2	Learn interrupt handling and embedded software development, including RTOS usage.
CO 3	Gain knowledge in embedded hardware units, interfacing, and platform design.
CO 4	Study real-time operating systems (RTOS) and process synchronization techniques.
CO 5	Master semaphore usage, message queues, and inter-process communication for embedded systems.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Linux/Unix

Course Outcomes	Statement
CO 1	Learn the history, architecture, and basic commands for navigating the Unix environment.
CO 2	Understand file system structure, file permissions, and security attributes.
CO 3	Use simple filters like pr, sort, grep, and sed for text processing.
CO 4	Master advanced shell programming concepts, such as AWK, shell functions, and parameter substitution.
CO 5	Gain knowledge of process management, system administration, and environment customization in Unix/Linux.

Course: Software Engineering and Project Management Lab

Course Outcomes	Statement
CO 1	Apply software development methodologies in real-world projects
CO 2	Manage project timelines, resources, and risks effectively
CO 3	Design and implement software solutions using best engineering practices
CO 4	Use project management tools for tracking and collaboration
CO 5	Evaluate software quality through testing and validation techniques

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: ASP. Net Lab

Course Outcomes	Statement
CO 1	Develop web applications using ASP.NET framework
CO 2	Implement server-side scripting and data handling in ASP.NET
CO 3	Design user interfaces using ASP.NET Web Forms and MVC
CO 4	Integrate databases with ASP.NET applications using ADO.NET
CO 5	Apply security features and best practices in web development

Course: Python Lab

Course Outcomes	Statement
CO 1	Develop applications using Python programming language
CO 2	Implement data structures and algorithms in Python
CO 3	Use Python libraries for data analysis and visualization
CO 4	Design and build web applications using Python frameworks
CO 5	Apply Python for automation and scripting tasks

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course Outcomes (COs)
3rd Semester

Course: Soft Computing

Course Outcomes	Statement
CO 1	Understand the core concepts of fuzzy computing, neural networks, and genetic algorithms.
CO 2	Gain knowledge of neural network architectures, learning methods, and their applications.
CO 3	Learn the back-propagation algorithm and its use in training neural networks.
CO 4	Understand associative memory systems and their practical uses in computing.
CO 5	Apply swarm intelligence techniques, including ACO, ABC, and Cuckoo search algorithms.

Course: PHP

Course Outcomes	Statement
CO 1	Understand and work with PHP syntax, variables, arrays, and control structures.
CO 2	Master file and directory handling, including uploading files and managing file systems.
CO 3	Gain proficiency in connecting PHP with MySQL databases and performing CRUD operations.
CO 4	Learn object-oriented programming concepts like classes, objects, and methods in PHP.
CO 5	Implement a Content Management System (CMS) using WordPress and Drupal.

School of Engineering and Technology
Shobhit University

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.su.ac.in

Course: Compiler Design

Course Outcomes	Statement
CO 1	Understand the structure and functioning of compilers and the classification of grammars.
CO 2	Learn the concepts of syntax analysis, including different parsing techniques and error handling.
CO 3	Develop skills in symbol table creation and management for both non-block and block structured languages.
CO 4	Master the generation of intermediate code and semantic analysis.
CO 5	Apply code optimization techniques, including redundant code elimination and loop optimizations.

Course: Android Programming

Course Outcomes	Statement
CO 1	Get an introduction to Android development, setup environments, and basic app structures.
CO 2	Understand how to use various Android UI widgets such as buttons, text inputs, and dialogs.
CO 3	Learn Android activity lifecycle management, intents, and fragments for dynamic content.
CO 4	Master Android menu handling and layout management using different layout types.
CO 5	Develop complex UI components like ArrayAdapters, GridViews, and ListViews in Android.

School of Engineering and Technology
Shobhit University Gangoh

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Data Science

Course Outcomes	Statement
CO 1	Understand the fundamentals of Big Data, statistics, and key statistical concepts in data analysis.
CO 2	Learn how to apply inferential statistics for population generalization and hypothesis testing.
CO 3	Gain proficiency in Python for data manipulation using libraries like NumPy, Pandas, and Matplotlib.
CO 4	Master exploratory data analysis techniques including data visualization and missing value analysis.
CO 5	Develop skills in supervised machine learning models such as SVM, logistic regression, and decision trees.

Course: Cryptography and Network Security

Course Outcomes	Statement
CO 1	Gain a solid understanding of cryptographic principles, terminology, and classical ciphers.
CO 2	Learn symmetric key cryptography techniques, including block ciphers (DES, AES) and stream ciphers.
CO 3	Understand asymmetric key cryptography and RSA, along with key exchange and digital signatures.
CO 4	Master the use of hash functions, MACs, and the role of message integrity in cryptography.
CO 5	Understand network security protocols such as SSL, TLS, IPsec, VPNs, and firewalls.

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Professional Ethics and Social Responsibility for Sustainability

Course Outcomes	Statement
CO 1	Understand the significance of professional ethics and the role of values and morals in decision-making.
CO 2	Learn ethical decision-making models and strategies for resolving conflicts in professional settings.
CO 3	Gain insight into the concept of social responsibility and its importance in business and sustainability.
CO 4	Explore sustainable practices in professional ethics and the role of professionals in environmental responsibility.
CO 5	Study global perspectives on ethics, challenges of maintaining standards in a globalized world.

Course: Enterprise Resource Planning

Course Outcomes	Statement
CO 1	Understand the components, architecture, and evolution of Enterprise Resource Planning (ERP) systems.
CO 2	Learn the functionality and interconnectivity of various ERP modules such as finance, HR, and supply chain.
CO 3	Master ERP implementation strategies, including project planning, resource allocation, and change management.
CO 4	Gain knowledge of ERP customization, integration with legacy systems, and successful integration case studies.
CO 5	Understand data management, migration processes, and reporting tools for ERP systems.

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Software Project Planning and Management

Course Outcomes	Statement
CO 1	Learn the principles and practices of software project management and the phases of the software development lifecycle.
CO 2	Master project planning and estimation techniques, including expert judgment, analogy-based, and parametric models.
CO 3	Identify and analyze project risks, and develop strategies to mitigate and monitor these risks.
CO 4	Gain insight into resource management, team dynamics, communication, and conflict resolution in software projects.
CO 5	Understand quality assurance and control techniques for ensuring software quality throughout the project lifecycle.

Course: Internet of Everything

Course Outcomes	Statement
CO 1	Understand the concept of the Internet of Everything (IoE) and its components: people, processes, data, and things.
CO 2	Learn the architectural framework and enabling technologies of IoE systems, such as sensors and cloud computing.
CO 3	Explore communication models in IoE, including device-to-device, device-to-cloud, and cloud-to-cloud.
CO 4	Master data management techniques and analytics tools to handle large IoE data and derive insights.
CO 5	Understand the security challenges in IoE systems and strategies for securing devices, networks, and ensuring privacy.

School of Engineering and Technology
Shobhit University

Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: PHP Lab

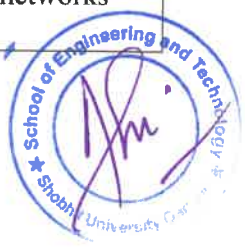
Course Outcomes	Statement
CO 1	Develop dynamic web applications using PHP
CO 2	Implement server-side scripting and database integration with PHP
CO 3	Design user interfaces using HTML, CSS, and PHP
CO 4	Utilize PHP for form handling and session management
CO 5	Apply security practices for PHP-based web applications

Course: Data Science Lab

Course Outcomes	Statement
CO 1	Implement data preprocessing and cleaning techniques
CO 2	Apply machine learning algorithms for data analysis
CO 3	Use data visualization tools to interpret and present results
CO 4	Develop predictive models using statistical and computational methods
CO 5	Analyze and interpret large datasets to extract meaningful insights

Course: Cryptography and Network Security Lab

Course Outcomes	Statement
CO 1	Implement cryptographic algorithms for secure communication
CO 2	Apply encryption and decryption techniques in real-world scenarios
CO 3	Analyze network security protocols and their vulnerabilities
CO 4	Design and implement secure authentication mechanisms
CO 5	Evaluate security risks and develop countermeasures in networks



Shobhit University
EDUCATION EMPOWERS

Babu Vijendra Marg, Adarsh Institutional
Area Gangoh, Distt. Saharanpur (U.P.)
247341, India
Tel: +91 7830810052
E-mail: registrargangoh@shobhituniversity.ac.in
U.: www.sug.ac.in

Course: Minor Project Lab

Course Outcomes	Statement
CO 1	Design and develop a functional prototype for a selected problem
CO 2	Apply software engineering principles in project development
CO 3	Integrate theoretical concepts into practical applications
CO 4	Demonstrate effective problem-solving and project management skills
CO 5	Present project outcomes with detailed documentation and analysis

Course: Seminar Based on Learning Lab

Course Outcomes	Statement
CO 1	Research and analyze recent advancements in computer science
CO 2	Present and discuss technical topics with clarity and confidence
CO 3	Develop critical thinking through peer-reviewed discussions
CO 4	Enhance academic writing and documentation skills
CO 5	Apply learning outcomes to propose innovative solutions or projects

School of Engineering and Technology
Shobhit University Gangoh