Department of BCA

2025-26

Learning Outcomes, Program Outcome, Program Specific Outcome and Course Outcome

Learning Outcomes

After successfully completing this course, the students will be able to:

➢ Acquired knowledge for understanding data and select suitable methods for data analysis.

➢ Explain the basic concepts and principles of strategic management analyze the internal and external environment of business.

➢ Outline a defensive programming concept. Ability to handle possible errors during program execution.

➢ Improve the ability to use standard input/output and file input/output operations.

➢ State the importance of Human Resource function in planning and staffing organizational manpower requirements.

➢ Specify how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances.

➢ Use accounting and business terminology, explain the objective of financial reporting and related key accounting assumptions and principles.

➢ Explain the basic principles of creating Java applications with graphical user interface (GUI).

➢ Describe the options for employee separation/termination.

Programme Outcomes

PO1: Apply knowledge of computing fundamentals, mathematics, probability, statistics, and computer science concepts to solve complex problems.

PO2: Analyze problems and identify appropriate computing requirements using suitable algorithms and data structures.

PO3: Design, develop, and evaluate software applications using programming languages such as C, Java, Python, C#, PHP, and R.

PO4: Apply object-oriented programming principles to build modular, reusable, and scalable software systems.

PO5: Design and manage databases using SQL, PL/SQL, DBMS, RDBMS, and emerging database technologies.

PO6: Develop and deploy web applications using HTML, CSS, JavaScript, PHP, ASP.NET, Bootstrap, and CMS platforms.

PO7: Understand and implement concepts of Operating Systems, Linux, memory management, and process scheduling.

PO8: Apply computer networking principles, network security mechanisms, and emerging networking technologies.

PO9: Use modern tools, frameworks, IDEs, SDKs, and software development environments effectively.

PO10: Apply software engineering principles including SDLC, testing strategies, quality management, and configuration management.

PO11: Analyze data using statistical tools, spreadsheets, Power BI, Python libraries, and visualization techniques.

PO12: Apply machine learning, artificial intelligence, and data mining techniques to solve real-world problems.

PO13: Demonstrate knowledge of cloud computing, IoT, Android development, and emerging technologies.

PO14: Understand IT security principles, cyber laws, and ethical responsibilities in computing.

PO15: Apply computational thinking and algorithmic paradigms such as dynamic programming, backtracking, and graph algorithms.

PO16: Demonstrate effective communication skills in English and regional languages for professional and academic purposes.

PO17: Exhibit teamwork, leadership, discipline (NCC/NSS), and community engagement responsibilities.

PO18: Develop entrepreneurial skills and understand business environment, digital marketing, MIS, and e-commerce concepts.

PO19: Apply design thinking and innovation methodologies to develop creative solutions and prototypes.

PO20: Demonstrate professional ethics, social responsibility, and constitutional values in computing practices.

PO21: Use research-based knowledge and critical thinking to investigate complex computing problems.

PO22: Adapt to technological changes through continuous learning and skill development.

PO23: Manage projects effectively including planning, implementation, documentation, testing, and evaluation.

Programme Specific Outcome

PSO1- Explain the basic concepts of Human resources management and its applications in the individual, team and organizational levels.

PSO2- Imparted knowledge required for planning, designing and building Complex Application Software Systems.

PSO3- Deliver professional service with updated technologies in computer application based career.

PSO4- Produced entrepreneurs who developed customized solutions for small and medium enterprises.

PSO5- Our graduates will apply basic principles and practices of computing, grounded in mathematics and science to successfully complete hardware, software related engineering projects to meet customer business objectives, productively engage in research.

PSO6- Solve problems in areas like Software Design and Development, Computer Architectures and Operating System, web systems, Computer Networks and Database Management Systems to address critical challenges in the field of IT.

PSO7- Write SQL DDL, DML commands to create, modify and drop objects within a relational database. Retrieve and store information in a relational database using SQL in a multi-user, web based environment.

PSO8- The ability to understanding, analyzing and applying management concepts in the areas related to strategy, human resources and finance for efficient running of the business organization of varying complexity in competitive era.

PSO9:- Students will learn relevant managerial accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.

PSO10-Use the underlying unifying structures of mathematics. (i.e. sets, relations and functions, logical structure) the relationship among them.

PSO11- Demonstrate practical applications of these statistical and optimization methods in the field of Computer Sciences and Applications.

PSO12- Ability to understand and write effective project reports in multidisciplinary environment in the context of changing technologies.

PSO13: Build Up programming, analytical and logical thinking abilities

PSO-14: Know the recent developments in IT, features possibilities and limitations and understand the value of life ling learning.

PSO15: Exhibit knowledge to secure corrupted system, protect personal data and secure computer networks in organisations

Course Outcome of BCA-I (SEM-I)

PROBLEM SOLVING TECHNIQUES (SEC101)

CO1: Understand basic terminology of computers, problem solving, programming Languages and their evolution (Understand)

CO2: Create specification from problem requirements by asking questions to disambiguate the requirement statement. (Create)

CO3: Design the solution from specification of a problem and write pseudo code of the algorithm using basic building blocks or structured programming constructs (Sequence, Selection and Repetition statement). (Create)

CO4: Translate an algorithm into a C computer program (Create)

CO5: Testing and analyzing programs using debugging tools. (Analyze)

COMPUTER ARCHITECTURE CC102

CO6: To Understand the basics of Digital Electronics and Binary Number System

CO7: To Learn the implementation of Combinational Circuit.

CO8: To Learn the implementation of Sequential Circuit.

CO9: To Understand the Organization of basic computers and concept of memory organization

GENERAL ENGLISH AEC102

CO10: Explain concept of Word Formation in English Language.

CO11: Illustrate use of phrases and clauses in sentences in English Language.

CO12: Identify common errors in English Writing.

CO13: Develop reading and listening, writing and speaking skills.

INDIAN VISION FOR HUMAN SOCIETY MDE 101

CO14: Explain the concept of "Vasudhaiva Kutumbkam" and its realization process as a base for the development of vision for a human society.

CO15: Identify the universality in humans and its coexistence in existence.

CO16: Demonstrate the sense of responsibility, duties, and participation of individual for establishment of fearless society.

CO17: Explain the apparently rational, verifiable and universal solution from ancient Indian knowledge system for the holistic development of physical, mental and spiritual wellbeing of one and all, at the level of individual, society, nation and ultimately the whole world.

ENVIRONMENTAL SCIENCE AND SUSTAINABILITY VAC101

CO18: Explore the basic environmental concepts and issues relevant to the business and management field.

CO19: Recognize the interdependence between environmental processes and socioeconomic dynamics.

CO20: Determine the role of business decisions, policies, and actions in minimizing environmental degradation.

CO21: Identify possible solutions to curb environmental problems caused by managerial actions.

CO22: Develop skills to address immediate environmental concerns through changes in

Business operations, policies, and decisions.

मराठी(MARATHI)-१ AEC103-I

CO23: मराठी भाषा व साहित्य अभ्यासाची अभिरुची निर्माण होईल.

CO24: मराठी साहित्याचे आकलन विश्लेषण व समीक्षण करता येईल.

CO25: मराठी किवतेचे आस्वादन व मूल्य निर्णाय करता येईल.

CO26: वैचाररक व लिलत स्वरूपाचे लेखन करता येईल.

CO27: पत्रव्यवहाराचे कौशल्य अवगत होईल.

प्रयोजनमूलक हिंदी और कहहताएँ AEC103-II

CO28: प्रयोजनमूलक हिंदी के प्रित छात्रों मे रुची बढाना |

CO29: प्रयोजनमूलक हिंदी एवं उसकी उपयोगिता से छात्रों को परिरचत कराना |

CO30: काव्य एवं कहानी विधवा का आस्वाद विवेचन एवं महत्व समझाना |

CO31: हिंदी किव एवं कहानीकारों तर्ा उनकी रचनाओं से परिरचत कराना |

CO32: साहित्य के माध्यम से नैितक मूल्य राष्ट्र ीय मूल्य एवं उत्तदायियत्व के प्रित आस्ा निर्माण करना |

CO33: हिंदी भाषा के श्रवण,पठण, विचार ,कल्पना एवं लेखन क्षमता का छात्र मे विकास करना |

संस्कृ त (SANSKRIT)-I AEC103-III

CO34: वेदाांचा परिचय करून देतात.

CO35: ऋग्वेदातील निवडक सूक्ाांचा अभ्यास करतात.

CO36: सुसंस्कृतील सांकल् पना समजून घेतात

CO37: अिननकतेच्या अनुषांगाने चे अवलोकन संस्कृतील करतात.

GERMAN-I AEC103-IV

CO38: Recognize basic grammar used in German Language

CO39: Demonstrate familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type.

CO40: Execute himself /herself and can ask and answer questions about personal details such as where he/she lives, people he/she knows and things he/she has.

CO41: Debate and interact in a simple way provided the other person talks slowly and clearly and is prepared to help.

CO42: Assess development in German language vocabulary by interacting with others

CO43: Construct presentation of how to use and scope of German Language.

MATHEMATICS FOUNDATIONS TO COMPUTER SCIENCE – II CC103

CO44: This course helps the students to understand correct lines of arguments and proofs.

CO45: This course introduces mathematical techniques that are foundations for understanding advanced computational methods, including numerical methods and optimization.

CO46: This course helps the students to understand various problem-solving strategies and methods to tackle both theoretical and practical challenges in computer science.

DATA STRUCTURES CC104

CO47: Understand the fundamental concepts of Data Structures and their applications.

CO48: Develop problem-solving skills using Data Structures.

CO49: Implement Data Structures using C programming language

OPERATING SYSTEMS CC105

CO50: Explain the fundamentals of the operating system.

CO51: Comprehend multithreaded programming, CPU scheduling, process management, process synchronization, memory, deadlocks, and storage management.

CO52: Compare the performance of CPU scheduling algorithms

CO53: Identify the features of I/O and File handling methods.

OBJECT ORIENTED PROGRAMMING USING JAVA SEC102

CO54: To introduce the object oriented programming system concepts

CO55: To introduce syntax and semantics of Java programming language

CO56: To develop modular programs using Java

CO57: To setup JDK environment to create, debug and run Java programs

WEB TECHNOLOGIES SEC103

CO58: To understand the concepts and architecture of the World Wide Web, Markup languages along with Cascading Style Sheets

CO59: To understand the concepts of event handling and data validation mechanisms.

CO60: To understand the concepts of embedded dynamic scripting on client side programming

CO61: To develop modern interactive web applications

INDIAN CONSTITUTION VAC201

CO62: Explain concept of the Indian Constitution, particularly from the perspective of economic governance and business

CO63: Employ a nuanced analytical framework about ongoing constitutional debates and battles which affect the domain of business

CO64: Develop a sense of how questions of economic growth have to be balanced with other constitutional commitments, including social and economic justice.

मराठी (MARATHI)-2 उद्यम झेप-2 AEC103-I

CO65: मराठी भाषा व साहित्य अभ्यासाची अभिरुची निर्माण होईल .

CO66: मराठी साहित्याचे आकलन विश्लेषण व समीक्षण करता येईल.

CO67: मराठी किवतेचे आस्वादन व मूल्य निणाय करता येईल.

CO68: वैचाररक व लिलत स्वरूपाचे लेखन करता येईल .

(HINDI)-2
प्रयोजनमूलक हिंदी और कहानियाँ AEC103-II

CO69: प्रयोजनमूलक हिंदी के प्रित छात्रों मे रुची बढाना |

CO70: प्रयोजनमूलक हिंदी एवं उसकी उपयोगगिता से छात्रों को परिरचत कराना |

CO71: काव्य एवं कहानी िधवा का आस्वाद िववेचन एवं महत्व समझाना |

CO72: हिंदी कहानीकारों तर्ा उनकी रचनाओं से परिरचत कराना |

CO73: साहित्य के माध्यम से नैतिक मूल्य राष्ट ाीय मूल्य एवं उत्तदायियत्व के प्रित आस्ा ािनमााण

करना |

संस्कृत (SANSKRIT)-II AEC103-III

CO74: सांस्कृत ननतीसाधाीत्याचा पररचयकरून देतो.

CO75: धनतोदेशातील कर्ाािाािािा ंचा पररचय करून देतो.

CO76: कर्ाािाािािािमिुन धाोणाच्या नीतीबोि ाािे नवश्लेषण धकतो.

CO77: Recall everyday familiar expressions and very basic phrases aimed at the satisfaction of needs of a concrete type. Make use of the basic grammar concepts correctly

CO78: Demonstrate familiar everyday expressions and very basic phrases aimed at the satisfaction of needs of a concrete type.

CO79: Execute himself /herself and can ask and answer questions about personal details such as where he/she lives, people he/she knows and things he/she has.

CO80: Debate and interact in a simple way provided the other person talks slowly and clearly and is prepared to help.

CO81: Assess development in German language vocabulary by interacting with others

<u>JAPANESE-II</u>
<u>AEC103-V</u>

CO82: Recognize basic grammar used in Japanese Language

CO83: Relate and demonstrate regional languages into Japanese language.

CO84: Experiment Japanese vocabulary in day-today speaking.

CO85: Debate and interact in a simple way with other persons.

CO86: Develop basic Japanese language skills (listening, speaking, writing, and reading).

<u>RUSSIAN-II AEC103-VI</u>

CO87: Explain basic knowledge of Russian Language grammar.

CO88: Construct meaningful and grammatically correct sentences in Russian language.

CO89: Develop Russian Language skill (reading, writing, listening, speaking).

Probability and Statistics CC201

CO90: Understand measures of central tendency and dispersion.

CO91: Represent the statistical data in a systematic way to analyze and draw meaningful information from them.

CO92: Apply fundamental concepts of probability to analyze data and make informed decisions.

CO93: Formulate the hypothesis and use various tests for testing of hypothesis.

CO94: Apply correlation and regression techniques to study relationships between variables and predict outcomes.

CO95: Use statistical tools and software packages for data analysis, interpretation, and effective presentation of results.

Data Base Management System CC202

CO96: Understand Core Concepts of DBMS

CO97: Understand components of Database Design

CO98: Identify different database models

CO99: Demonstrate Database Design including forms and reports through MS-Access

CO100: Apply normalization techniques and functional dependencies to design efficient and consistent database structures.

CO101: Develop and manage relational databases using MS-Access through queries, forms, reports, and macros for real-life applications

Python Programming SEC201

CO102: Develop modular Python programs.

CO103: Apply suitable Python libraries to solve a given problem.

CO104: Understand basic Data visualization and File handling in Python.

CO105: Apply exception handling techniques to develop robust Python programs.

CO106: Perform file operations and manage data in text, CSV, and JSON formats efficiently.

CO107: Create meaningful 2D and 3D data visualizations using Python libraries to interpret and present data.

Software Engineering CC203

CO108: To Acquire a comprehensive understanding of the software development lifecycle and its application in contemporary software engineering practices.

CO109: To Develop proficiency in project management methodologies and strategic decision-making for successful software project execution.

CO110: To Master the art of software design, development, and testing to produce robust and efficient software solutions.

CO111: To understand the importance of quality management in software engineering for sustenance and reliability.

CO112: Apply software configuration management, version control, and release management techniques to ensure controlled and traceable software development.

CO113: Analyze and implement effective software testing strategies to enhance software reliability and maintainability.

Professional Elective I
Basics of Data Analytics using Spreadsheet DSE201.1

CO114: Understand the basics of MS Excel for data analytics and its applications.

CO115: To explore advanced Excel functions and data analytics tools.

CO116: Develop proficiency in using spreadsheet software for data manipulation andAnalysis.

CO117: Build and use spreadsheet models for decision making & Communicate data insights effectively

CO118: Apply data cleaning, transformation, and preprocessing techniques to prepare datasets for analysis.

CO119: Analyze real-world datasets using Excel tools and derive actionable insights for decision-making in various domains.

Professional Elective I
Feature Engineering DSE201.2

CO120: Understand the importance of features in machine learning and differentiate between various types of data and features

CO121: Apply basic feature preprocessing techniques

CO122: Implement feature engineering techniques for numerical data and utilize categorical data techniques

CO123: Understand feature selection and feature transformation techniques with their applications

CO124: Apply dimensionality reduction techniques, such as PCA, to improve model performance and reduce computational complexity.

CO125: Evaluate and select relevant features to enhance the accuracy and efficiency of machine learning models.

Professional Elective I
Web Programming I DSE201.3

CO126. Understand the fundamentals of HTML5 and CSS3.

CO127. Learn how to build web applications using HTML5, CSS3, and jQuery.

CO128. Develop skills in making responsive web site using bootstrap.

CO129. Explore features of jQuery to make interactive web applications

CO130: Implement responsive and visually appealing web pages using HTML5, CSS3, and Bootstrap components.

CO131: Utilize jQuery effectively to enhance user interaction and dynamic behavior in web applications.

Yoga VAC201.1

CO132: Gain a comprehensive understanding of yoga and its modern applications for holistic well-being.

CO133: Demonstrate proficiency in yogic anatomy and physiology, enhancing yoga practice and promoting physical and energetic balance.

CO134: Master the Eight Limbs of Yoga and comprehend their psychological impact, fostering personal growth and self-realization.

CO135: Integrate yoga principles into sports and physical fitness activities to enhance performance and prevent injuries.

CO136: Develop skills in wellness management and nutrition.

Sports VAC201.2

CO137: Understand the fundamental principles and concepts of sports management, including its scope, organizational structure, and ethical considerations.

CO138: Analyse the role of marketing and sponsorship in the sports industry, with a focus on branding, target audience segmentation, and event management.

CO139: Develop proficiency in financial management techniques specific to the sports industry, including revenue generation, cost management, and investment strategies.

CO140: Explore the application of analytics and technology in sports, including performance evaluation, strategic decision-making, and fan engagement.

CO141: Apply theoretical knowledge to practical scenarios through case studies and projects, fostering critical thinking and problem-solving skills in sports management contexts.

NCC VAC201.3

CO142: Understand the foundational role of drill in fostering discipline and leadership within a group, enabling effective command towards achieving common goals.

CO143: Appreciate the importance of grace and dignity in executing foot drill movements, recognizing their significance in enhancing performance and teamwork.

CO144: Comprehend the criticality of weapon handling and detailed safety measures, emphasizing the importance of accident prevention through strict adherence to safety protocols.

CO145: Develop an awareness of diverse terrain types and their strategic significance in battle craft, enabling informed decision-making and effective utilization of terrain features for tactical advantage.

NSS VAC201.4

CO146: To provide students with an understanding of the history, philosophy, and basic concepts of the National Service Scheme (NSS).

CO147: To familiarize students with the aims, objectives, and organizational structure of NSS.

CO148: To equip students with knowledge about NSS programmes, activities, and their relevance.

CO149: To develop an understanding of community mobilization techniques and their importance in NSS activities.

CO150: To cultivate an appreciation for volunteerism, shramdan (voluntary labor), and their role in community development initiatives.

Disaster Management VAC201.5

CO151: To provide understanding of the concepts related to disaster

CO152: To highlight the importance and role of disaster management

CO153: To enhance awareness of institutional processes and management strategies to mitigate the impacts of disasters

Vivek Vahini VAC201.6

CO154: Enhancing scientific approach among students

CO155: Circulate Intellectualism and Conscience among students and Society.

CO156: Reducing discrimination based on race, gender and caste.

CO157: Creating an egalitarian approach among students

BCA-II SEMESTER (IV)

Relational Database Management System (RDBMS) CC204

CO158: Understand the Core Concepts of RDBMS

CO159: Demonstrate different types querris useing Relational Database.

CO160: Apply advanced SQL queries, joins, and set operations to manipulate and retrieve data efficiently.

CO161: Develop and implement PL/SQL programs including cursors, triggers, stored procedures, and functions to automate database tasks.

Computer Networks CC205

CO162: Understand the fundamental concepts of Computer Networks and their applications.

CO163: Develop problem-solving skills related to network design, implementation, and Troubleshooting.

CO164: Implement network protocols and configure network devices

CO165: Identify the applications of Networking with its management

CO166: Analyse and implement network security measures, including firewalls, VPNs, and encryption techniques to protect network infrastructure.

CO167: Evaluate emerging networking technologies such as SDN, NFV, IoT, and 5G, and their impact on network design, management, and performance.

Design and Analysis of Algorithms CC206

CO168: To impart to students the understanding of basic algorithm designing paradigms.

CO169: Identify basic knowledge on how to analyse an algorithm.

CO170: To enable a student to synthesize efficient algorithms in common design situations and real-life problems.

CO171: Identify the limitations of algorithms in solving specific problems.

CO172: Apply advanced algorithmic paradigms such as backtracking, dynamic programming, and graph algorithms to solve complex problems efficiently.

CO173: Analyze computational intractability and classify problems into P, NP, NP-Complete, and NP-Hard to understand algorithm limitations.

Artificial Intelligence CC207

CO174: Understand the characteristics of rational agents, and the environment in which they operate, and gain insights about problem-solving agents.

CO175: Gain insights about Uninformed and Heuristic search techniques and apply them to solve search applications.

CO176: Obtain insights about the knowledge representation using Propositional logic, Predicate calculus and probabilistic reasoning through fuzzy logic.

CO177: Obtain a basic understanding of the AI domains and their applications and examine the legal and ethical issues of AI

CO178: Apply advanced AI techniques such as adversarial search, constraint satisfaction, and evolutionary algorithms to solve complex real-world problems.

CO179: Evaluate AI applications in various domains and assess their social, ethical, and legal implications.

Professional Elective – II

Data Visualization DSE202.1

CO180: Understand the role of Power BI in data visualization and its importance.

CO181: Explore the ethical considerations and challenges in data visualization.

CO182: Learn about visual perception and its impact on data interpretation.

CO183: Study different types of visualizations and their appropriate uses.

CO184: Design and develop interactive dashboards and reports using Power BI and other visualization tools to communicate insights effectively.

CO185: Apply principles of good visualization design, data modeling, and storytelling to present data clearly and ethically for decision-making.

Professional Elective–II

Introduction to ML DSE202.2

CO186: Define and explain machine learning concepts, types and types of Dataset. CO2: Implement and apply supervised and unsupervised learning techniques CO3: Develop and evaluate simple machine learning models

CO187: Analyze Neural Networks and apply appropriate machine learning algorithms depending on the problems with some real-world data

CO188: Apply performance evaluation metrics to assess and improve the accuracy of machine learning models.

CO189: Analyze and implement neural network models for practical problem-solving while considering ethical implications of AI and ML applications.

Professional Elective–II

CO190: To Understand the fundamentals of PHP programming language.

CO191: To develop PHP applications using Error handling.

CO192: To design object-oriented programming (OOP) principles for PHP

CO193: To understand data abstraction using interfaces and abstract class.

CO194: Develop dynamic web applications using PHP by integrating arrays, functions, and object-oriented programming concepts.

CO195: Implement robust error handling, debugging, and logging mechanisms to ensure reliability and maintainability of PHP applications.

Design Thinking and Innovation SEC202

CO196: Understand design-based thinking approach to solve problems

CO197: Propose real-time innovative product designs and Choose appropriate frameworks, strategies, techniques during prototype development.

CO198: Understand the importance of prototyping.

CO199: Analyze emotional experience and Inspect emotional expressions to better understand users while designing innovative products

CO200 :Design prototype for solving problem

BCA-III (SEM-V)

Java Programming- CC 501

CO201: Understand the features of Java Language

CO202: Demonstrate Object-Oriented Programming using Java

CO203: Develop Multithreaded and Networking applications

CO204: Design GUI applications using AWT and Swing.

CO205: Use the Java SDK environment to create, debug and run simple Java programs

CO206: Implement applications with simple graphical user interfaces.

Data Warehousing and Data Mining –(CC 502

CO207: Define the Data warehouse architecture and its Implementation.

CO208: Describe the Architecture of a Data Mining system.

CO209: Understand the various Data pre-processing Methods.

CO210: Per Describe the Architecture of a Data Mining system.

CO211: Distinguish the various Data pre-processing Methods.

CO212: Perform classification and prediction of data

CO213: Perform classification and prediction of data

DOT NET Technology – (CC-503)

CO214: Understand features of C# DOT NET

CO215: Implement various server controls for website development

CO216: Apply validation and state management for interactive website development

CO217: Design and develop dynamic web application using ADO.Net

Web Content Management (WordPress/Joomla) DSE-504

CO218: Understand different CMS platforms and its applications

CO219: Apply themes and customize design for the websites using Wordpress

CO220: Understand the essential concepts of Joomla and its features

CO221: Develop and manage a web site using Joomal Modules and Template

Emerging Trends in Database – DSE -504

CO222: Differentiate between SQL and NoSQL database system.

CO223: Analyze given data using MongoDB.

CO224: Understand the different types of Cloud databases

CO225: Identify emerging trends in database management

CO226: Analyse the effects of various data types and the use of NULLs.

CO227: Prepare SQL queries for ordering data and grouping data.

CO228: Write SQL queries for data definition/manipulation/alteration

Linux DSE 504

CO229: Understand the basic components of Operating Systems and their interactions.

CO230: Explain the structure and functions of operating systems along with their components, types and working.

CO231: Understand the basics of File, Device and Disk Storage Management in Linux

CO232: Learn Shell Programming through Linux

CO233: Understand VI editior in Linux

CO234: Learn file handling command in linux

Digital Marketing- GE-505.1

CO235: Learn the applications of Digital Marketing

CO236: Analyze the different digital marketing avenues.

CO237: Examine digital marketing tools.

CO238: Build real life problems in the domain of digital marketing

CO239: Understand affiliate marketing

Management Information System –GE-505.2

CO240: Understand the fundamental principles of information systems

CO241: Describe the types of management and decision making

CO242: Demonstrate different types of IS used in business.

CO243: Explain various applications of MIS

E-Commerce-GE-505.3 s

CO244: Understand the various concept of E-Commerce

CO245: Know the different e-payment systems

CO246: Analysis E-Security options

CO247: Examine the different Security Solutions

Skill Development IV SEC SB506

CO248: Reflect on the importance of Professional behavior.

CO249: Articulate and adapt the various facets that make up one's personality.

Lab Course IX based on CC501

CO250: Implement the Concept of OOP in Java through simple programs.

CO251: Implementation and Evaluation of concept related to class and

CO252: Understand Inheritance, concept of Multiprogramming and Exception Handling.

CO253: Implement the Concept of interface, packages

Lab course-X Based on CC504 and CC503

CO254: Design console applications using C#.

CO255: Design web application using ASP.Net

B.C.A Part-III (Sem-VI)
Python CC-601

CO256: Acquire programming skills in core Python.

CO257: Develop Python programs with conditionals and loops.

CO258: Understand advance datatypes in Python Programming.

CO259: Develop problem solving skills and their implementation through Python.

CO260: Understand Modules, packages in Python Programming.

CO261: Understand file handling in Python Programming.

IT Security-CC-602

CO262: Understand the concept and need of IT security.

CO263: Identify different security threats to information systems.

CO264: Describe security controls used for IS security.

CO265: Understand provisions in IT Act 2000 and Design Security policy for IT Enabled Organization.

Internet of Things(IoT) DSE 603.1

CO266: Understand the fundamentals of Internet of things.

CO267: Identify different components in IoT environment

CO268: Demonstrate Hardware and Software configuration for IoT using Arduino

CO269: Differentiate between different types of IoT applications using Arduino

Android Programming DSE 603.2

 CO270: Understand the basics of Android and Android Platform

CO271: Identify different components used in user interface related to Android application development

CO272: Analyze the importance of data persistence in mobile environment

CO273: Illustrate different advanced topic used in Android development

R Programming DSE 603.3

CO274: Understand the fundamental syntax of R through practice exercises.

CO275: Describe the control statements and functions in R.

CO276: Analyze a data set in R and represent findings using the appropriate R packages.

CO277: Use data visualization tools.

CO278: Understand data types in R

CO279: Understand graphs in R lang.

IT Management GE 604.1

CO280: Understand IT assets and describe functions of IT Department

CO281: Identify IT infrastructure components.

CO282: Describe network infrastructure components and security management activities.

CO283: Demonstrate best practices and operational processes in Data Centre Management

Cloud Computing GE604.2

CO284: Understand the fundamental principles of Cloud Computing.

CO285: Understand the importance of virtualization in distributed computing and how this has enabled the development of Cloud Computing.

CO286: Explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and

CO287: Challenges brought about by the various models and services in cloud computing.

CO288: Describe cloud computing applications

Knowledge Management GE604.3

CO289: Explain the fundamentals of knowledge management

CO290: Understand of the Knowledge Management life cycle.

CO291: Categorize the Knowledge Management tools.

CO292: Implement Knowledge Management in different sectors.

CO293: Knowledge Management Techniques and Tools.

CO294 : Knowledge Management and E-commerce

Soft Skills & Personality Development SEC SB 605

CO295: Comprehending the Value of a Professional Mindset

CO296: Enunciating and Adapting the Myriad Facets of One's Personality

Lab Course-XI Based on CC 601

CO297: Demonstrate and use different Datatypes in Python.

CO298: Apply various built looping statements and Modules provided by Python.

Lab Course XI based on DSE603

CO299: Demonstrate the circuit configuration for IoT applications using Arduino boards.

CO300: Apply the different functions provided in Arduino libraries for execution of IoT application

Lab Course XI based on DSE603

CO301: Design Mobile Applications using different UI components in Android.

CO302: Apply Android activities to develop mobile applications

Lab Course XI Based on DSE 603

CO303: Apply syntax of R through practice exercises.

CO304: Implement the control statements, functions, data visualization. in R.

CO305: Implement the packages .in R.

CO306: Implement the leap year program in R.

CO307: Implement the prime or not program in R.

CO308: Implement the odd even program in R.

Major Project CCL608

CO309: System Design & Planning.

CO310: Implementation Using Appropriate Technologies.

CO311: Testing, Validation & Evaluation.

CO312: Project Management Skills.

CO313: Students will be able to **apply creativity**, integrate modern tools/technologies, and propose innovative   solutions to improve system efficiency.

ABBREVIATIONS

GUI- graphical user interface.

SQL- Structured Query Language.

OLAP -Online analytical processing.

IT. -Information technology.

DDL- Data Defination Language.

DML- Data Manipulation Language.

DBMS- Database Management System.

OS- Operating System.

Linux - Lovable Intellect Not Using XP.

FIFO- First In, First Out.

LIFO- Last In Last Out.