SIES College of Commerce and Economics (Autonomous), Sion (East)

Department of Information Technology

B.Sc. (IT) PROGRAM OUTCOMES

PO- 1: After completing three years Degree Course – Bachelor of Science (Information Technology) (B.Sc.-IT) program, Learners will develop foundational knowledge of computer programming.

PO- 2: Learners will acquire practical knowledge, training in professional skills, ethics and values to build competencies in the area of information technology.

PO- 3: Learners will achieve holistic personal growth and development in a cultural context along with commercial, communication, research, analytical and managerial skills in practical and theoretical concepts in Information Technology.

PO- 4: Learners will enhance IT skills and be able to relate to global challenges and be exposed to newer avenues in Information Technology.

PO- 5: Learners will be trained in leadership skills and social responsibilities with sensitivity towards environment and sustainability

Program: B.Sc. (Information Technology)
Year: First Year
Semester: I
Subject: Web Programming / Web Programming Lab
Subject Code: BSIT-MJS1-101 / BSIT-MJPS1-101

Course Outcomes:
After completion of the course,

No	Course Outcomes	PO Mapping
CO 1 (Remember)	Learner will be able to describe the structure and purpose of HTML5 elements, CSS properties, and their role in creating structured and visually appealing web pages.	PO-1, PO-2, PO-3
CO 2 (Understanding)	Learner will be able to apply HTML5 and CSS techniques to design and format web page components such as text, images, lists, tables, forms, and multimedia elements.	PO-1, PO-2, PO-4
CO 3 (Applying)	Learner will be able to demonstrate the use of JavaScript operators, statements, and objects to implement client-side interactivity and dynamic web content.	PO-1, PO-2, PO-4
CO 4 (Analyzing)	Learner will be able to analyze the Document Object Model (DOM) and event-handling mechanisms to design responsive and interactive web applications.	PO-1, PO-2,PO-3, PO-4
CO 5 (Evaluating)	Learner will be able to develop server-side scripts using PHP to process user input, handle form data, and generate dynamic web content.	PO-1, PO-2, PO-3, PO-4
CO 6 (Creating)	Learner will be able to integrate HTML5, CSS, JavaScript, XML, and PHP to design and deploy a complete dynamic and interactive web application.	PO-1, PO-2, PO-3, PO-4, PO-5

Program: B.Sc. (Information Technology)
Year: First Year
Semester I
Course: Imperative Programming / Imperative Programming Lab
Subject Code: BSIT-MJS1-102 / BSIT-SEPS1-108

Course Outcomes:
After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	The learner will be able to identify various programming languages and recognize their use to develop different software and hardware applications.	**PO1, PO2**
CO 2 (Understanding)	The learner will be able to demonstrate basic programming knowledge using arithmetic and conditional operators, and associate it with built-in functions in C.	**PO1, PO2, PO3**
CO 3 (Applying)	The learner will be able to apply and interpret condition checking, decision making, and looping by using various control structures in C programming.	**PO2, PO3, PO4**
CO 4 (Analysing)	The learner will be able to analyze the concept of arrays and categorize different macros by applying them in program design.	**PO2, PO3, PO4**
CO 5 (Evaluating)	The learner will be able to summarize and evaluate the use of pointers and file handling concepts for effective program execution in C.	**PO3, PO4, PO5**
CO 6 (Creating)	The learner will be able to design and write complete C programs integrating all key programming concepts learned during the course.	**PO2, PO3, PO4, PO5**

Program: B.Sc. (Information Technology)
Year: First Year
Semester: I
Course: Foundation of Human Skills
Subject Code: BSIT-OES1-103

Course Outcomes:
After completion of the course,

No	Course Outcome	PO Mapping
CO 1 (Remember)	Students will be able to identify the key aspects influencing human skills	PO2, PO3
CO 2 (Understanding)	Students will be able to explain the importance of understanding Individual Differences, Ethics, Personality, Johari Window, Thinking and Perception in personal and professional lives.	PO2, PO3, PO5
CO 3 (Applying)	Students will be able to apply the knowledge the human skills and ethics to navigate through changing situations.	PO2, PO3, PO5
CO 4 (Analysing)	Student will be able to analyse how individual differences, personality, cognitive processes and ethics influence decisions.	PO2, PO3, PO5
CO 5 (Evaluating)	Students will be able to assess the impact of Individual Differences, individual differences, personality, cognitive processes and ethics on relationships and real world organisational scenarios.	PO2, PO3, PO5
CO 6 (Creating)	Students will be able to create strategies for effectively managing different people and situations in personal and professional contexts.	PO2, PO3, PO5

Program: B.Sc. (Information Technology)
Year: First Year
Semester: I
Subject: Discrete Mathematics / Discrete Mathematics Lab
Subject Code: BSIT-OES1-105 / BSIT-VSPS1-107

Course Outcomes:
After completion of the course,

No	Course Outcomes	PO Mapping
CO 1 (Remember)	The learner will be able to recall and define the fundamental concepts of sets, relations, functions, logic, graphs, trees, and probability.	PO-1, PO-2
CO 2 (Understanding)	The learner will be able to explain set equalities, logical equivalences, methods of proof, and properties of relations, functions, graphs, and probability.	PO-1, PO-4
CO 3 (Applying)	The learner will be able to explain set equalities, logical equivalences, methods of proof, and properties of relations, functions, graphs, and probability.	PO-2, PO-4
CO 4 (Analyzing)	The learner will be able to analyze graphs, trees, and probability distributions, and evaluate their properties using matrix representation, Hasse diagrams, and Bayes' theorem.	PO-2, PO-3, PO-4
CO 5 (Evaluating)	The learner will be able to evaluate the validity of logical arguments, proofs, and problem-solving approaches in discrete mathematics contexts.	PO-3, PO-4
CO 6 (Creating)	The learner will be able to construct and design solutions using discrete structures such as graphs, trees, recurrence relations, and probability models for computing problems.	PO-2, PO-5

Program: B.Sc. (Information Technology)
Year: First Year
Semester: I
Course: Communication Skills in English I
Subject Code: BSIT-AECS1-109

Course Outcomes:
After completion of the course,

No	Course Outcome	PO Mapping
CO 1 **Remember**	The learner will be able to identify and use appropriate channels, modes and media of communication.	PO-2, PO-3, PO-4
CO 2 **Understanding**	The learner will be able to read, recall and discover from text and content.	PO-2, PO-3, PO-4
CO 3 **Applying**	The learner will be able to execute effective oral and written communication, individually and in groups.	PO-2, PO-3
CO 4 **Analysing**	The learner will be able to integrate reading, writing, speaking and listening skills to meet professional, personal and evolving global requirements.	PO-1, PO-2, PO-3, PO-4, PO-5
CO 5 **Evaluating**	The learner will be able to summarize various data formats and texts.	PO-1, PO-2, PO-3, PO-4, PO-5
CO 6 **Create**	The learner will be able to plan, formulate, create and design resources for communication.	PO-2, PO-3 PO-4, PO-5

Program: B.Sc. (Information Technology)
Year: First Year
Semester I
Course: Green Computing
Subject Code: BSIT-VECS1-110

Course Outcomes
After completion of the course,

No	Course Outcomes	PO Mapping
CO 1 (Remember)	Learners will be able to identify how to our daily lifestyle creates bad impact on environment.	PO1, PO2, PO5
CO 2 (Understanding)	Learners will be able to interpret initiatives taken by various countries to reduce and recycle e-waste.	PO1, PO2, PO3, PO5
CO 3 (Applying)	Learners will be able to relate the impact of e-waste on environment and human health.	PO2, PO3, PO5
CO 4 (Analyzing)	Learners will be able to select various methods to reduce power usage, save paper etc.	PO1, PO2, PO3, PO4, PO5
CO 5 (Evaluating)	Learners will be able to evaluate the green methods implemented in business.	PO2, PO3, PO4, PO5
CO 6 (Creating)	Learners will be able to plan and develop ideas for e-waste management.	PO2, PO3, PO4, PO5

Program: B.Sc. (Information Technology)
Year: First Year
Semester: I
Course: Indian Knowledge System I
Subject Code: BSIT-IKSS1-111

Course Outcomes:
After completion of the course,

No	Course Outcomes	PO mapping
CO 1 (Remember)	The Learner will be able to recall and describe the philosophical foundations of Indian Knowledge Systems (IKS) including Sāṅkhya, Vaiśeṣika, and Nyāya.	PO-1, PO-2, PO-4
CO 2 (Understanding)	The Learner will be able to explain Indian management thoughts, work ethics, personality development, and leadership principles with reference to Indian ethos, epics, Bhagavad Gita, and other scriptures.	PO-1, PO-2, PO-4
CO 3 (Applying)	The Learner will be able to demonstrate the application of dietary guidelines from Ayurveda and Naturopathy and analyze the distinctive features of regional cuisines in India.	PO-1, PO-2, PO-4
CO 4 (Analyzing)	The Learner will be able to examine the significance of sacred geography (mountains and rivers) and evaluate their cultural, spiritual, and ecological relevance.	PO-1, PO-2, PO-4
CO 5 (Evaluating)	The Learner will be able to assess India's contributions to medicine, surgery, and mathematics in the global context and evaluate their impact on modern science.	PO-1, PO-2, PO-4, PO-3
CO 6 (Creating)	The Learner will be able to integrate knowledge of Indian arts, music, and dance traditions to design innovative models for promoting cultural sustainability and holistic education.	PO-1, PO-2, PO-4, PO-5

Program: B.Sc.(Information Technology)
Year: First Year
Semester: II
Subject: Digital Electronics / Digital Electronics Lab
Subject Code: BSIT-MJS2-101 / BSIT-MJPS2-101
Course Outcomes:
After completion of the course,

No	Course Outcomes	PO Mapping
CO1 (Remember)	The learner will be able to understand analog and digital systems, various number systems, and perform conversions between binary, octal, decimal, and hexadecimal systems.	PO1, PO4
CO 2 (Understanding)	The learner will be able to perform binary and digital arithmetic operations, including addition, subtraction, multiplication, division, and negative number representation using 1's and 2's complement.	PO1, PO2
CO 3 (Applying)	The learner will be able to analyze and design basic and universal logic gates, and implement complex logic circuits using universal gates.	PO1, PO2, PO3
CO 4 (Analysing)	The learner will be able to apply Boolean algebra principles and minimization techniques, including Karnaugh Maps and the Quine-McCluskey method, to simplify Boolean expressions and design logic circuits.	PO2, PO3, PO4
CO 5 (Evaluating)	The learner will be able to design and analyze combinational logic circuits using systematic design procedures and understand their types and applications.	PO2, PO3
CO 6 (Creating)	The learner will be able to understand sequential circuits, flip-flops (SR, D, JK, T), counters, and registers, and apply them in designing sequential digital systems.	PO1, PO2, PO3, PO4

Program: B.Sc.(Information Technology)
Year : First Year
Semester II
Subject: Object Oriented Programming / Object Oriented Programming Lab
Subject Code: BSIT-MJS2-102 / BSIT-SEPS2-109

Course Outcomes:
After completion of the course,

No	Course Outcomes	PO Mapping
CO 1 **(Remember)**	The learner will be able to define basic concepts of object-oriented programming.	PO-1, PO-2, PO-4
CO 2 **(Understanding)**	The learner will be able to explain the concepts of classes, objects, constructors & destruction with their uses and distinguish between object-oriented & procedural-oriented programming.	PO-1, PO-2
CO 3 **(Applying)**	The learner will be able to demonstrate the concepts of data conversions, polymorphism & virtual functions.	PO-1, PO-2
CO 4 **(Analyzing)**	The learner will be able to explain program development using inheritance and handling of exceptions in the program.	PO-1, PO-2, PO-5
CO 5 **(Evaluating)**	The learner will be able to summarize concepts of templates, working with files & debugging.	PO-1, PO-2
CO 6 **(Creating)**	The learner will be able to write programs using object-oriented methodology.	PO-1, PO-2, PO-3, PO-4

Program: B.Sc.(Information Technology)
Year: First Year
Semester II
Subject: Principles of Operating Systems
Course Code: BSIT-MNS2-103

Course Outcomes:
After completion of the course,

No	Course Outcomes	PO Mapping
CO 1 (Remember)	The learner will be able to describe the structure of OS and basic architectural components involved in OS design.	PO-1, PO-2, PO-3, PO-4
CO 2 (Understanding)	The learner will be able to explain the mechanisms used by operating systems to manage processes and threads, as well as diverse memory management techniques.	PO-1, PO-2, PO-3, PO-4
CO 3 (Applying)	The learner will be able to demonstrate the concepts of file handling and I/O operations.	PO-1, PO-2, PO-3, PO-4
CO 4 (Analyzing)	The learner will be able to explain deadlocks, its causes, and practical solutions, as well as virtualization and cloud concepts.	PO-3, PO-4, PO-5
CO 5 (Evaluating)	The learner will be able to compare and differentiate between the concepts of multiprocessor, multicomputer & distributed system and would understand various concepts of security.	PO-2, PO-3, PO-4
CO 6 (Creating)	The learner will be able to rewrite various scheduling algorithm for scheduling processes & threads.	PO-1, PO-2, PO-3, PO-4

Program: B.Sc.(Information Technology)
Year: First Year
Semester II
Subject: Human Resource Management
Course Code: BSIT-OES2-104

Course Outcomes:
After completion of the course,

No	Course Outcomes	PO Mapping
CO 1, CO2 (Remember, Understanding)	The learner will be able to understand the fundamentals of Human Resource Management.	PO-1, PO-2, PO-3, PO-4
CO 3, CO 4 (Applying, Analysing)	The learner will be able to apply management principles to practical business situations in IT contexts and analyze the recruitment strategies.	PO-1, PO-3, PO-4, PO-5
CO 5, CO 6 (Evaluating, Creating)	The learner will be able to utilize quantitative skills for effective decision-making and organizational improvement and design effective strategies.	PO-2, PO-3, PO-4

Program: B.Sc. (Information Technology)
Year: First Year
Semester II
Subject: Numerical and Statistical Methods / Numerical and Statistical Methods Lab
Subject Code: BSIT-OES2-106 / BSIT-VSPS2-108

Course Outcomes:
After completion of the course,

No	Course Outcomes	PO Mapping
CO 1 (Remember)	The learner will be able to recall and define the basic concepts of numerical methods, types of errors, accuracy, precision, and statistical distributions..	PO-1, PO-2
CO 2 (Understanding)	The learner will be able to explain various numerical methods such as bisection, Newton-Raphson, and interpolation techniques along with their convergence and limitations..	PO-1, PO-4
CO 3 (Applying)	The learner will be able to apply numerical techniques to solve algebraic, transcendental, and differential equations, and implement basic iterative algorithms..	PO-2, PO-4
CO 4 (Analyzing)	The learner will be able to analyze and compare different numerical methods in terms of accuracy, stability, and computational efficiency..	PO-2, PO-3, PO-4
CO 5 (Evaluating)	The learner will be able to evaluate the performance of numerical and statistical methods for solving real-world problems and validate results through error analysis..	PO-3, PO-4
CO 6 (Creating)	The learner will be able to develop computational models and simulation-based solutions using numerical and statistical methods for engineering applications.	PO-2, PO-5

Program: B.Sc. (Information Technology)
Year: First Year
Semester: II
Course: Communication Skills in English II
Subject Code: BSIT-AECS2-110

Course Outcomes:
After completion of the course,

No	Course Outcome	PO Mapping
CO 1 **Remember**	The learner will be able to identify and use appropriate channels, modes and media of communication.	PO-2, PO-3, PO-4
CO 2 **Understanding**	The learner will be able to read, recall and discover from text and content.	PO-2, PO-3
CO 3 **Applying**	The learner will be able to execute effective oral and written communication, individually and in groups.	PO-2, PO-3
CO 4 **Analysing**	The learner will be able to integrate reading, writing, speaking and listening skills to meet professional, personal and evolving global requirements.	PO-1, PO-2, PO-3, PO-4, PO-5
CO 5 **Evaluating**	The learner will be able to summarize various data formats and texts.	PO-1, PO-2, PO-3, PO-4, PO-5
CO 6 **Create**	The learner will be able to plan, formulate, create and design resources for communication.	PO-2, PO-3 PO-4

Program: B.Sc.(Information Technology)

Year : First Year

Semester II

Subject: Environment Sustainability in IT

Course Code: BSIT-VECS2-111

Course Outcomes:

After completion of the course ,

No	Course outcomes	PO Mapping
CO 1 (Remember)	Learners will be able to recall and define key sustainability concepts and practices in IT	PO1, PO5
CO 2 (Understanding)	Learners will be able to explain and interpret environmental sustainability principles in the IT context.	PO1, PO2, PO4, PO5
CO 3 (Applying)	Learners will be able to use knowledge to implement sustainable practices and technologies in IT operations and development.	PO1, PO2, PO3, PO5
CO 4 (Analyzing)	Learners will be able to analyze how IT solutions contribute to addressing environmental issues. They will evaluate the role of IT in supporting sustainable business practices.	PO3, PO5
CO 5 (Evaluating)	Learners will be able to evaluate the environmental impact of IT products and services across their lifecycle. They will assess strategies for e-waste management and recycling.	PO2, PO4, PO5
CO 6 (Creating)	Learners will be able to create awareness campaigns, educational materials, and training programs to promote sustainable IT practices.	PO2, PO3, PO4, PO5