Programme Outcomes (PO) of BCA(H) with effect from (Academic year 2023-2024)

PO 1. Fundamental and Domain Knowledge - Acquire and apply fundamental knowledge of theories and principles of management in the field of computer applications.

PO 2. Innovative Thinking & Problem Solving – Foster innovative thinking and problem-solving skills by utilizing various problem-solving theories in the context of computer applications.

PO 3. Critical Thinking – Cultivate independent and critical thinking abilities to analyze assumptions and business problems using relevant data for effective solutions in the field of computer applications.

PO 4. Effective Communication - Develop effective communication skills and soft skills specific to the field of computer applications, encompassing different styles and types of communication.

PO 5. Leadership and Team Work – Comprehend the impact of leadership and teamwork in the functioning of an organization within the context of computer applications. Understand various leadership styles and their implications in a business environment, as well as the significance of teamwork and team building in the field.

PO 6. Global Orientation and Cross-Cultural Appreciation - Understand the challenges and global aspects prevalent within the field of computer applications. Appreciate cross-cultural dimensions of management in the global context.

PO 7. Entrepreneurship - Recognize entrepreneurial opportunities within the modern business landscape in the field of computer applications. Explore scalability of existing business avenues and foster an entrepreneurial mindset for potential start-ups.

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PO 8. Environment and Sustainability – Learn about environmental protection and sustainable practices relevant to computer applications. Develop an understanding of techniques related to climate change, water crisis/management, greenwashing, pollution control, and other environmental concerns within the field.

PO 9. Social Responsiveness and Ethics - Recognize and address ethical issues and practices in organizations within the field of computer applications, understanding their impact on societal benefits.

PO 10. Life Long Learning – Recognize the importance of self-initiated learning in personal development and improving the quality of life, while also aligning with the objectives of the organization. Foster a mindset of continuous learning within the field of computer applications.

Vikas Chandra Sharma

HoD- SSCIT

BCA (H)
SEMESTER-I

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Fundamentals of Computers

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230101	4	60	20%	30%	-	30%	20%

Course Outcomes(COs)

- Understand the basic concepts of computer hardware and software.
- Demonstrate problem solving skills.
- Understand the structure of operating system, its applications and commands.
- To be familiar with network tools, concepts of protocols and network interfaces.
- Understands the concept of Computer's Input/output devices.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low	Low		Low		Medium	Low
CO2	High	High	Medium	Medium	Low			Medium		Low
CO3	High	High	High	Low					Medium	Low
CO4	Medium	Medium	High	Medium	Medium	Low	Low			High
CO5		Medium		High	Medium	Low	Medium	Medium		Medium

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: PROGRAMMING IN C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230102	4	60	20%	30%	-	30%	20%

Course Outcomes(COs)

- Analyse a given problem and develop an algorithm to solve the problem.
- Design, develop and test programs written in 'C'.
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low	Low		Low		Medium	Low
CO2	High	High	Medium	Medium	Low			Medium		Low
CO3	High	High	High	Low					Medium	Low
CO4	Medium	Medium	High	Medium	Medium	Low	Low			High
CO5		Medium		High	Medium	Low	Medium	Medium		Medium

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Web Development Using HTML, CSS & XML

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BCA230103	4	60	20%	30%	-	30%	20%

Course Outcomes(COs)

Certainly, here are concise one-liner course outcomes for the mentioned syllabus:

- Understand web concepts, protocols, and client-server computing principles.
- Create structured web content using HTML, CSS, and apply formatting and styling techniques.
- Apply CSS for designing layouts, navigation, forms, and enhance user experience.
- Implement dynamic elements using JavaScript, VBScript, and enhance interactivity.
- Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Medium	Low	Low	Low	Medium	Low
CO2	High	High	High	Medium	Medium	Low		Medium		Medium
CO3	High	High	Medium	Medium	Low			Medium	Low	Medium
CO4	Medium	High	High	Medium	Low				Medium	High
CO5	Medium	Medium	High	Medium	Medium	Low			Medium	Medium

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Mathematical Foundation

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230104	4	60	20%	30%	-	50%	-

Course Out comes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand sets and perform operations and algebra on sets.
- Identify functions and determine their properties.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Identify functions and determine their properties.
- To develop the knowledge about derivatives and know various applications of differentiation.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Low				Low	Low
CO2	High	High	Medium	Medium	Low					Medium
CO3	High	Medium	High	Medium	Low				Medium	Low
CO4	Medium	High	Medium	Low	Low		Low	Medium		Medium
CO5	High	Medium	Medium	Medium	Low				Medium	Medium

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Communication Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
AEC	AEC230101	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	

Course Outcomes(COs)

- Inculcation of different skills will be added in a student's career.
- Students' employability skills will be enhanced.
- 3.Ability to speak in English will be improved through practice.
- Self Analysis tool will help the students to identify their strengths and weaknesses to work upon.
- Hesitation of speaking in public and in English will be reduced.

CO-PO MAPPING:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	Medium	High	High	Medium	Low			Low	Medium
CO2	Medium	High	High	High	Medium			Medium	Low	High
CO3	High	High	Medium	Medium	Low				Medium	Medium
CO4	Medium	Medium	Medium	High	Low				Medium	Medium
CO5	High	Medium	Medium	Medium	Medium					High

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Core Course Title: Foundation of Entrepreneurship

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230101	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- To know various theories of entrepreneurship and trends.
- To identify various issues and challenges in starting a new venture.
- To understand innovation and its implications
- To create entrepreneurial mindset through understanding entrepreneurial personality

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Medium	Low	High		Medium	Medium
CO2	Medium	High	High	Medium	Medium	Low	High		Medium	High
CO3	High	High	Medium	Medium	Medium	Medium	High		Medium	High
CO4	Medium	Medium	Medium	High	Medium	Low	High		Medium	Medium

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester I

Course Title: Indian Science & Technology

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	IKS230101	2	30	20%	30%	-	50%	

Course Outcomes(COs)

- Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.
- Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.
- Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant astronomical discoveries.

- Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.
- Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Medium	Medium	Low	Low	Medium	Low	Medium
CO2	High	High	Medium	High	Medium	Low	Low	Medium	Medium	Medium
CO3	Medium	High	Medium	Medium	Low			Medium	Medium	High
CO4	High	Medium	Medium	Medium	Medium	Low		Medium	Medium	Medium
CO5	Medium	Medium	Medium	High	Medium	Low			Low	Medium

BCA (H)
SEMESTER-II

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester II

Course Title: Data Structure Using C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230201	4	60	20%	30%	-	30%	20%

Course Outcomes(COs):

Here are concise course outcomes for the syllabus:

- Apply arrays for varied applications, understand data structure classifications and operations.
- Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.
- Master linked lists, including insertion, deletion, sorting, and node counting.
- Gain expertise in binary trees, traversals, and tree expression manipulation.
- Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Medium		Low		Medium	Medium
CO2	High	High	High	Medium	Low		Low			Medium
CO3	High	High	Medium	Medium	Medium	Low		Medium	Low	Medium
CO4	Medium	High	Medium	Low	Medium	Low		Medium	Low	Medium
CO5	High	Medium	Medium	Medium	Medium	Low			Medium	Low

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester II

Course Title: Object Oriented Concepts using C++

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	**Continuous Assessment**	**Practical**	**Theory**	**Practical**
Core	BCA230202	4	60	**20%**	**30%**	**-**	**30%**	**20%**

Course Outcomes(COs)

Here are concise course outcomes for the syllabus:

- Understand the fundamental concepts of Object-Oriented Programming (OOP) and grasp C++ basics, including operators, data types, and identifiers.
- Master control flow structures like if-else, loops, and learn about classes, objects, encapsulation, constructors, and memory allocation.
- Acquire proficiency in working with arrays, strings, functions (overloading, inline), and operator overloading.

- Develop a solid understanding of pointers, inheritance, class hierarchy, and abstract classes.
- Gain knowledge of file handling, exception handling, namespaces, and stream operations.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Low				Low	Medium
CO2	High	High	High	Medium	Medium	Low		Medium	Low	Medium
CO3	High	Medium	Medium	Low	Low	Low		Medium	Medium	Medium
CO4	High	High	Medium	Medium	Medium	Low	Low	Medium	Medium	High
CO5	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Medium	Medium

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BCA (Honours) Programme

Semester II

Course Title: Core Java

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BCA230203	4	60	20%	30%	-	30%	20%

Course Outcomes(COs):

- Proficiently apply Java programming concepts including data types, control structures, arrays, strings, inheritance, packages, and exception handling.
- Proficiently apply Java programming concepts of lasses and multithreading
- Design interactive Java applets using AWT controls, layout managers, and event listeners while mastering string handling.
- Gain expertise in networking with datagram and TCP/IP server sockets

- Learn to establish JDBC connections and utilize connection pooling.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Low		Low	Medium	Medium	Medium
CO2	High	High	Medium	Medium	Medium		Medium			Medium
CO3	High	High	High	Medium	Low	Low	Low	Medium	Medium	Medium
CO4	Medium	Medium	Medium	Low	Medium			Low	Low	Medium
CO5	Medium	Medium	High	Medium	Medium	Low		Medium	Medium	High

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BCA (Honours) Programme

Semester II

Course Title: Foundation in Statistical Methods

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
MDC	BCA230204	3+1	60	20%	30%	-	50%	2

Course Outcomes(COs):

- Develop proficiency in organizing data through tabulation, frequency distribution, and graphical representation.
- Understand and compute measures like mean, median, mode, range, quartile deviation, mean deviation, and standard deviation for assessing data patterns.
- The concept of skewness and apply Karl Pearson's Coefficients of Skewness in practical scenarios.
- Gain insight into correlation types and methods, including Karl Pearson's correlation coefficient, to assess relationships between variables in datasets.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Low			Medium	Low	Medium
CO2	High	High	Medium	Medium	Low		Medium	Medium		Medium
CO3	High	Medium	High	Low	Medium			Medium	Medium	Medium
CO4	Medium	Medium	Medium	Medium	Medium			Medium	Low	Medium

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester II

Core Course Title: Identifying Entrepreneurial Opportunities

Category ofCourse	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Exploration of opportunities from the market
- Check technical, market, financial and other types of Feasibility of a business idea.
- Develop business model to describe the rationale of how an organization creates, delivers, and captures value
- Identification of various Business Opportunities from the market

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Medium		High	Medium	Low	Medium
CO2	High	High	High	Medium	Medium	Low	High		Medium	Medium
CO3	High	High	Medium	Medium	Medium	Low	High	Medium	Medium	High
CO4	Medium	Medium	Medium	High	Medium	Low	High		Medium	Medium

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BCA (Honours) Programme

Semester II

Course Title: Logical and Critical Thinking

Category Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
ACE	**AEC230202**	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Students are able to understand the basic concept of Logical and Critical Thinking
- Students are able to solve problems
- Student analytical ability increased.
- Student can be placed in service based company, government sector, PSU and it will also help in higher study.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Low		Low		Medium	Medium
CO2	High	High	Medium	Medium	Low	Low	Medium	Medium	Low	Medium
CO3	High	High	Medium	Medium	Medium	Low	Medium	Medium	Medium	Medium
CO4	Medium	Medium	Medium	Medium	Low	Low	Low	Low	Medium	High

Swarrnim School of Computing & IT

BCA (Honours) Programme

Semester II

Course Title: Environmental Studies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
VAC	VAC230201	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	-

Course Outcomes (COs)

- Enabling students to understand and realize the multi- disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- Understanding the relevance and importance of natural resources in the sustenance of life on earth and living standard. the importance of ecosystem, biodiversity, and nature.
- Correlating the human population growth and its trend to the environmental degradation and developing the awareness about his/her role towards environmental protection.
- Identifying different types of environmental pollution and control measures.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Medium	Medium	Low		Medium	Medium	Medium
CO2	High	High	Medium	High	Medium	Low		Medium	Medium	High
CO3	Medium	High	Medium	Medium	Low	Low		Medium	Medium	High
CO4	High	Medium	Medium	Medium	Medium	Low	Low	Medium	Medium	Medium

BCA (H)
SEMESTER-III

Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester III

Course Title: RELATIONAL DATABASE MANAGEMENT SYSTEM

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230301	4	75	20%	10%	20%	30%	20%

Course Outcomes(COs)

1. Understand the fundamental concepts of database systems and their architecture.
2. Develop the ability to design and model databases using ER diagrams and normalization techniques.
3. Gain proficiency in SQL for managing and manipulating relational databases.
4. Understand transaction management, concurrency control mechanisms, and database recovery techniques.
5. Explore emerging database technologies and their applications.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	Medium	Medium							Low
CO2	High	High	Medium		Low					Medium
CO3	High	High	High	Low					Low	Medium
CO4	Medium	Medium	High	Medium	Medium	Low		Low	Low	High
CO5		Medium		High	High	Medium	Low	Medium	Medium	

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BCA (Honours) Programme

BCA Semester III

Course Title: C# and DOT NET Framework

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230302	4	75	20%	10%	20%	30%	20%

Course Outcomes (COs):

1. Master the fundamentals of C# programming including syntax, data types, and control structures.
2. Develop and deploy .NET applications using various .NET Framework libraries and tools.
3. Utilize object-oriented programming concepts effectively in C# to design reusable and maintainable code.
4. Implement data access solutions with ADO.NET and LINQ.
5. Understand and apply advanced features of C# and the .NET Framework including asynchronous programming, reflection, and more.
6. Develop web applications using ASP.NET MVC and understand the basics of web services and API development.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low						Low
CO2	High	High	Medium	Medium			Low		Low	Medium
CO3	High	High	High	Medium	Medium			Low	Medium	Medium
CO4	Medium	Medium	High	Medium	Low		Low	Low	Medium	Low
CO5	Low	High	Low	High	Low	Medium	Medium		High	Medium
CO6	Low	High	Low	High	Low	Medium	Medium		High	Medium

Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester III

Course Title: Computer Communication and Networks

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230303	4	60	20%	30%	-	50%	-

Course Outcomes (COs):

1. Understand the basics of computer networking including network topologies, protocols, and architectures.
2. Master the fundamentals of data communication including transmission media, encoding, and signaling.
3. Gain proficiency in the Internet Protocol suite, including IP addressing, subnetting, and routing protocols.
4. Implement network services and applications, understanding the workings of DNS, DHCP, FTP, and email protocols.
5. Analyze network security concepts, including cryptography, security protocols, and network vulnerabilities.
6. Design and simulate small to 2-sized networks using network simulation tools.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium			Low				Low
CO2	High	High	High	Low				Low		Medium
CO3	High	Medium	Medium	Medium		Medium			Low	Medium
CO4	Medium	High	Medium	High	Medium	Low	Low		Low	Medium
CO5	Medium	Medium	High	Low		Low		High	High	Medium
CO6	Medium	High	Medium	Medium	High	Low	Medium	Low	Medium	High

Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester III

Course Title: Digital Marketing

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
MDC	BCA230303	4	75	20%	10%	20%	30%	20%

Course Outcomes (COs):

1. Understand the fundamentals of digital marketing and its role in the modern business environment.
2. Master the use of social media platforms for marketing and brand building.
3. Develop skills in creating, managing, and optimizing online advertising campaigns across various channels.
4. Gain proficiency in SEO techniques and content marketing strategies.
5. Understand the principles of email marketing and affiliate marketing.
6. Analyze and utilize web analytics for improving marketing strategies.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium		Medium	Medium		Low	Medium
CO2	Medium	High	Medium	High	High	High	Medium		Medium	Medium
CO3	High	High	High	Medium	Medium	Medium	High	Low	Medium	Medium
CO4	Medium	High	High	Medium		Medium	Medium	Low	Medium	High
CO5	Medium	Medium	Medium	High	Medium	Low	Medium		High	Medium
CO6	Medium	High	High	Medium	Low	Medium	Low	Low	High	High

Swarrnim School of Computing & IT

BCA (Honors) Programme

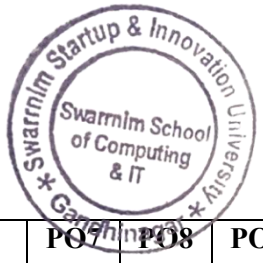
BCA Semester III

Course Title: Financial Literacy

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
AEC	AEC230303	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	-

Course Outcomes(COs)

1. Increasing familiarities with financial literacy and its different aspects.
2. Leading them towards financial wellbeing by teaching to manage their money.
3. Making them literate about the personal tax structure of India
4. Enable them to understand the process of tax e filing



CO-PO Mapping:

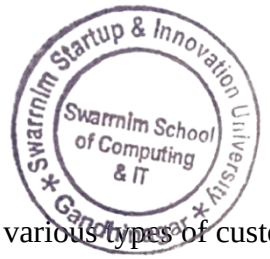
CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Low			Low	Low	Low	Low	High
CO2	High	Medium	Low	Low			Low	Low	Low	High
CO3	High	Medium	Medium	Low	Low			Low	Low	High
CO4	High	High	High		Low	Low	Low			High

Swarrnim School of Computing & IT
BCA (Honors) Programme

BCA Semester III

Course Title: Marketing Strategies for Start Ups

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230303	2	30	20%	30%	-	50%	-



Course Outcomes (COs)

1. Exploration of Marketing basics in real world
2. Understanding customer ways of reacting to marketing and various types of customers.
3. Understanding Brand and its importance as well as various techniques of Integrated marketing and Exploration of the new buzz social marketing basics

CO PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	High	Medium	High	High	High	High	Medium	Medium	High
CO2	Medium	Medium	Low		High	Medium	Medium	High	High	High
CO3	High	High	Low	Low	Medium	High	Medium	High	High	High

Swarrnim School of Computing & IT
BCA (Honors) Programme

BCA Semester III

Course Title: Understanding India

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
IKS	IKS230303	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	-

Course Outcomes (COs)

1. To understand the meaning and important of Indian Knowledge System
2. To identify the Actual foundational concepts for science and technology.
3. To understand the values of Humanities and Social Science.

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CO PO Mapping

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	High	Medium	High	High	High	High	Medium	Medium	High
CO2	Medium	Medium		Low	High	Medium	Medium	High	High	High
CO3	High	High	Low		Medium	High	Medium	High	High	High

BCA (H)
SEMESTER-IV

Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester IV

Course Title: Python Programming

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230401	4	75	20%	10%	20%	30%	20%

Course Outcomes (COs):

1. Grasp the basics of Python syntax, data types, and control structures to solve problems.
2. Utilize Python's extensive library set to develop various applications.
3. Apply object-oriented programming principles in Python for creating reusable and maintainable code.
4. Implement data handling using Python's file operations and understand database connectivity.
5. Develop web applications using Flask/Django and explore REST API development.
6. Understand the application of Python in data analysis, machine learning, and artificial intelligence.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Low						Medium
CO2	Medium	High	Medium			Low	Medium			Medium
CO3	High	High	High	Medium	Medium		Low		Low	Medium
CO4	Medium	High	High	Medium		Low	Low	Low	Medium	Medium
CO5	Low	High	Medium	High	Low	Medium	Medium		Medium	Medium
CO6	Low	High	High			Medium	Medium	Medium	High	High

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Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester IV

Course Title: Computer Multimedia and Animation

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BCA230402	4	75	20%	10%	20%	30%	20%

Course Outcomes (COs):

1. Understand the fundamentals of computer graphics, multimedia, and animation.

2. Master various software and tools used in multimedia and animation.

3. Create and manipulate digital images and videos.

4. Design effective multimedia presentations integrating text, images, audio, and video.

5. Develop basic animations using principles of animation and contemporary animation software.

6. Explore the application of multimedia and animation in various domains such as web design, game development, and virtual reality.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low		Low				Medium
CO2	Medium	High	Medium	Medium	Low	Low	Medium			Medium
CO3	Medium	High	Medium	High	Low	Medium	Low		Low	Medium
CO4	Medium	Medium	Medium	High	Medium	Low	Low		Low	Medium
CO5	Low	High	Medium	Medium	Low	Medium	Medium	Low	Medium	Medium
CO6	Low	Medium	Medium	Low		High	High	Low	Medium	High

Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester IV

Course Title: Operating System

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
Core	BCA230403	4	60	**Theory**	**Continuous Assessment**	**Practical**	**Theory**	**Practical**
				20%	**30%**	**-**	**50%**	**-**

Course Outcomes (COs):

1. Understand the fundamental concepts and architecture of operating systems.
2. Gain knowledge of process management including process scheduling, synchronization, and communication.
3. Master memory management techniques and understand the concepts of virtual memory.
4. Explore file systems, file management, and I/O systems.
5. Study system security measures, including authentication, malware, and security policies.
6. Analyze case studies of popular operating system.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High			Low			Low	Medium
CO2	High	High	High	Medium	Medium		Low			Medium
CO3	High	High	High			Low		Low	Medium	Medium
CO4	High	Medium	High	Medium	Low		Low		Low	Medium
CO5	Medium	Medium	High	High		Medium		High	High	Medium
CO6	Medium	High	Medium	Low	Low	High	Medium		Medium	High

Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester IV

Course Title: E-Commerce

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BCA230404	4	60	20%	30%	-	50%	-

Course Outcomes (COs):

1. Understand the fundamental concepts, technologies, and business models of e-commerce.
2. Analyze the impact of e-commerce on business strategies and operations.
3. Gain proficiency in designing and managing e-commerce platforms.
4. Explore digital marketing strategies and tools for e-commerce.
5. Understand the legal, ethical, and security issues in e-commerce.
6. Develop skills in e-commerce analytics for data-driven decision-making.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low		Low	Medium		Low	Medium
CO2	Medium	High	High	Medium	Medium	Medium	High		Low	Medium
CO3	Medium	High	Medium	High	Medium	Low	High		Medium	Medium
CO4	Low	High	Medium	High	Low	Medium	Medium	Low	Medium	Medium
CO5	Low	Medium	High	Medium		Low	Low	High	High	Medium
CO6	Low	High	High	Medium	Low	Medium	Medium	Low	Medium	High

Swarrnim School of Computing & IT

BCA (Honours) Programme

BCA Semester IV

Course Title: Soft Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	AEC23040	2	30	20%	30%	-	50%	-

Course Outcomes (COs):

1. Learners should understand the nuance of communication at workplace
2. The learners will be able to create various forms of business letters
3. The learners will be able to create various forms of business reports

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CO PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	High	Medium	High	High	High	High	Medium	Medium	High
CO2	Medium	Medium	Low	Low	High	Medium	Medium	High	High	High
CO3	High	High	Low	Low	Medium	High	Medium	High	High	High

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BCA (Honours) Programme

BCA Semester IV

Course Title: Emerging Technologies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
VAC	VAC230404	2	30	-	20%	30%	-	50%

Course Outcomes (COs)

1. Learners should be able to understand the concept and application..
2. Learners should be able to apply the tools, functions in Power BI and Tableau at the beginners level
3. Learners should be able to create a dashboard.

CO PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	High	Medium		High			Low	High
CO2	Medium	Medium	Medium	Medium	Medium	High	Medium	Low		High
CO3	High	High	High	High	Medium	High			Low	High

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B.Sc.-IT (H) Program Outcomes (PO)

PO 1. Fundamental and Domain Knowledge - Acquire and apply fundamental knowledge of theories and principles of management in the field of Information Technology.

PO 2. Innovative Thinking & Problem Solving – Foster innovative thinking and problem-solving skills by utilizing various problem-solving theories in the context of Information Technology.

PO 3. Critical Thinking – Cultivate independent and critical thinking abilities to analyze assumptions and business problems using relevant data for effective solutions in the field of Information Technology.

PO 4. Effective Communication - Develop effective communication skills and soft skills specific to the field of Information Technology, encompassing different styles and types of communication.

PO 5. Leadership and Team Work – Comprehend the impact of leadership and teamwork in the functioning of an organization within the context of Information Technology. Understand various leadership styles and their implications in a business environment, as well as the significance of teamwork and team building in the field.

PO 6. Global Orientation and Cross-Cultural Appreciation - Understand the challenges and global aspects prevalent within the field of Information Technology. Appreciate cross-cultural dimensions of management in the global context.

PO 7. Entrepreneurship - Recognize entrepreneurial opportunities within the modern business landscape in the field of Information

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Technology. Explore scalability of existing business avenues and foster an entrepreneurial mindset for potential start-ups.

PO 8. Environment and Sustainability – Learn about environmental protection and sustainable practices relevant to Information Technology. Develop an understanding of techniques related to climate change, water crisis/management, greenwashing, pollution control, and other environmental concerns within the field.

PO 9. Social Responsiveness and Ethics - Recognize and address ethical issues and practices in organizations within the field of Information Technology, understanding their impact on societal benefits.

PO 10. Life Long Learning – Recognize the importance of self-initiated learning in personal development and improving the quality of life, while also aligning with the objectives of the organization. Foster a mindset of continuous learning within the field of Information Technology.

Vikas Chandra Sharma

HoD- SSCIT

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BSC-IT (H)
SEMESTER-I

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester I

Course Title: Fundamentals of Computers

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230101	4	60	20%	30%	-	30%	20%

Course Outcomes(COs)

- Understand the basic concepts of computer hardware and software.
- Demonstrate problem solving skills.
- Understand the structure of operating system, its applications and commands.
- To be familiar with network tools, concepts of protocols and network interfaces.
- Understands the concept of Computer's Input/output devices.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low	Low		Low		Medium	Low
CO2	High	High	Medium	Medium	Low			Medium		Low
CO3	High	High	High	Low					Medium	Low
CO4	Medium	Medium	High	Medium	Medium	Low	Low			High
CO5		Medium		High	Medium	Low	Medium	Medium		Medium

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester I

Course Title: PROGRAMMING IN C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230102	4	60	20%	30%	-	30%	20%

Course Outcomes(COs)

- Analyze a given problem and develop an algorithm to solve the problem.
- Design, develop and test programs written in 'C'.
- Write, compile and debug programs in C language.
- Use different data types in a computer program.
- Design programs involving decision structures, loops and functions.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low	Low		Low		Medium	Low
CO2	High	High	Medium	Medium	Low			Medium		Low
CO3	High	High	High	Low					Medium	Low
CO4	Medium	Medium	High	Medium	Medium	Low	Low			High
CO5		Medium		High	Medium	Low	Medium	Medium		Medium

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester I

Course Title: Web Development Using HTML, CSS & XML

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BSCIT230103	4	60	20%	30%	-	30%	20%

Course Outcomes(COs)

Certainly, here are concise one-liner course outcomes for the mentioned syllabus:

- Understand web concepts, protocols, and client-server computing principles.
- Create structured web content using HTML, CSS, and apply formatting and styling techniques.
- Apply CSS for designing layouts, navigation, forms, and enhance user experience.
- Implement dynamic elements using JavaScript, VBScript, and enhance interactivity.

- Gain an introduction to XML, its manipulation, and basic server-side technologies for web applications.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO 6	PO 7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Medium	Low	Low	Low	Medium	Low
CO2	High	High	High	Medium	Medium	Low		Medium		Medium
CO3	High	High	Medium	Medium	Low			Medium	Low	Medium
CO4	Medium	High	High	Medium	Low				Medium	High
CO5	Medium	Medium	High	Medium	Medium	Low			Medium	Medium

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester I

Course Title: Mathematical Foundation

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230104	4	60	20%	30%	-	50%	-

Course Out comes (COs):

After completing this course satisfactorily, a student will be able to:

- Understand sets and perform operations and algebra on sets.
- Identify functions and determine their properties.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Identify functions and determine their properties.

- To develop the knowledge about derivatives and know various applications of differentiation.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Low				Low	Low
CO2	High	High	Medium	Medium	Low					Medium
CO3	High	Medium	High	Medium	Low				Medium	Low
CO4	Medium	High	Medium	Low	Low		Low	Medium		Medium
CO5	High	Medium	Medium	Medium	Low				Medium	Medium

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester I

Course Title: Communication Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
AEC	AEC230101	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	

Course Outcomes(COs)

- Inculcation of different skills will be added in a student's career.
- Students' employability skills will be enhanced.
- 3.Ability to speak in English will be improved through practice.
- Self Analysis tool will help the students to identify their strengths and weaknesses to work upon.
- Hesitation of speaking in public and in English will be reduced.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	Medium	High	High	Medium	Low			Low	Medium
CO2	Medium	High	High	High	Medium			Medium	Low	High
CO3	High	High	Medium	Medium	Low				Medium	Medium
CO4	Medium	Medium	Medium	High	Low				Medium	Medium
CO5	High	Medium	Medium	Medium	Medium					High

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BSCIT (Honours) Programme

Semester I

Core Course Title: Foundation of Entrepreneurship

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230101	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- To know various theories of entrepreneurship and trends.
- To identify various issues and challenges in starting a new venture.
- To understand innovation and its implications
- To create entrepreneurial mindset through understanding entrepreneurial personality

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Medium	Low	High		Medium	Medium
CO2	Medium	High	High	Medium	Medium	Low	High		Medium	High
CO3	High	High	Medium	Medium	Medium	Medium	High		Medium	High
CO4	Medium	Medium	Medium	High	Medium	Low	High		Medium	Medium

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester I

Course Title: Indian Science & Technology

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	IKS230101	2	30	20%	30%	-	50%	

Course Outcomes(COs)

- Gain an in-depth appreciation of India's technological heritage, including its contributions to metallurgy, textiles, ceramics, and more.
- Understand the historical evolution of water management systems and transportation methods in India, and their impact on society.
- Explore the intersection of mathematics and astronomy in India, from ancient mathematical texts to significant astronomical discoveries.
- Examine India's ecological wisdom and environmental practices, including their applications in agriculture, architecture, and sustainable land management.
- Recognize India's role in shaping global technology and knowledge dissemination through its historical connections and contributions to various fields.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Medium	Medium	Low	Low	Medium	Low	Medium
CO2	High	High	Medium	High	Medium	Low	Low	Medium	Medium	Medium
CO3	Medium	High	Medium	Medium	Low			Medium	Medium	High
CO4	High	Medium	Medium	Medium	Medium	Low		Medium	Medium	Medium
CO5	Medium	Medium	Medium	High	Medium	Low			Low	Medium

BSC-IT (H)
SEMESTER-II

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester II

Course Title: Data Structure Using C

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230201	4	60	20%	30%	-	30%	20%

Course Outcomes(COs):

Here are concise course outcomes for the syllabus:

- Apply arrays for varied applications, understand data structure classifications and operations.
- Implement stacks and queues, perform infix-postfix conversion, and grasp recursion concepts.
- Master linked lists, including insertion, deletion, sorting, and node counting.
- Gain expertise in binary trees, traversals, and tree expression manipulation.
- Proficiently use sorting (bubble, insertion, quick) and searching (sequential, binary) techniques.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Medium		Low		Medium	Medium
CO2	High	High	High	Medium	Low		Low			Medium
CO3	High	High	Medium	Medium	Medium	Low		Medium	Low	Medium
CO4	Medium	High	Medium	Low	Medium	Low		Medium	Low	Medium
CO5	High	Medium	Medium	Medium	Medium	Low			Medium	Low

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester II

Course Title: Object Oriented Concepts using C++

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230202	4	60	20%	30%	-	30%	20%

Course Outcomes(COs)

Here are concise course outcomes for the syllabus:

- Understand the fundamental concepts of Object-Oriented Programming (OOP) and grasp C++ basics, including operators, data types, and identifiers.
- Master control flow structures like if-else, loops, and learn about classes, objects, encapsulation, constructors, and memory allocation.
- Acquire proficiency in working with arrays, strings, functions (overloading, inline), and operator overloading.
- Develop a solid understanding of pointers, inheritance, class hierarchy, and abstract classes.

- Gain knowledge of file handling, exception handling, namespaces, and stream operations.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Low				Low	Medium
CO2	High	High	High	Medium	Medium	Low		Medium	Low	Medium
CO3	High	Medium	Medium	Low	Low	Low		Medium	Medium	Medium
CO4	High	High	Medium	Medium	Medium	Low	Low	Medium	Medium	High
CO5	Medium	Medium	Medium	Medium	Medium	Low	Low	Low	Medium	Medium

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BSCIT (Honours) Programme

Semester II

Course Title: Core Java

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BSCIT230203	4	60	20%	30%	-	30%	20%

Course Outcomes(COs):

- Proficiently apply Java programming concepts including data types, control structures, arrays, strings, inheritance, packages, and exception handling.
- Proficiently apply Java programming concepts of lasses and multithreading
- Design interactive Java applets using AWT controls, layout managers, and event listeners while mastering string handling.
- Gain expertise in networking with datagram and TCP/IP server sockets
- Learn to establish JDBC connections and utilize connection pooling.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Low		Low	Medium	Medium	Medium
CO2	High	High	Medium	Medium	Medium		Medium			Medium
CO3	High	High	High	Medium	Low	Low	Low	Medium	Medium	Medium
CO4	Medium	Medium	Medium	Low	Medium			Low	Low	Medium
CO5	Medium	Medium	High	Medium	Medium	Low		Medium	Medium	High

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BSCIT (Honours) Programme

Semester II

Course Title: Foundation in Statistical Methods

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
MDC	BSCIT230204	3+1	60	20%	30%	-	50%	2

Course Outcomes(COs):

- Develop proficiency in organizing data through tabulation, frequency distribution, and graphical representation.
- Understand and compute measures like mean, median, mode, range, quartile deviation, mean deviation, and standard deviation for assessing data patterns.
- The concept of skewness and apply Karl Pearson's Coefficients of Skewness in practical scenarios.
- Gain insight into correlation types and methods, including Karl Pearson's correlation coefficient, to assess relationships between variables in datasets.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Low			Medium	Low	Medium
CO2	High	High	Medium	Medium	Low		Medium	Medium		Medium
CO3	High	Medium	High		Medium	Low		Medium	Medium	Medium
CO4	Medium	Medium	Medium	Medium	Medium			Medium	Low	Medium

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester II

Core Course Title: Identifying Entrepreneurial Opportunities

Category ofCourse	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230202	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

- Exploration of opportunities from the market
- Check technical, market, financial and other types of Feasibility of a business idea.
- Develop business model to describe the rationale of how an organization creates, delivers, and captures value
- Identification of various Business Opportunities from the market

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	Medium	Medium	Medium		High	Medium	Low	Medium
CO2	High	High	High	Medium	Medium	Low	High		Medium	Medium
CO3	High	High	Medium	Medium	Medium	Low	High	Medium	Medium	High
CO4	Medium	Medium	Medium	High	Medium	Low	High		Medium	Medium

Swarrnim School of Computing & IT

BSCIT (Honours) Programme

Semester II

Course Title: Logical and Critical Thinking

Category Course	Course Code	Credit	Contact Hours	Internal			External	
ACE	**AEC230202**	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	-

Course Outcomes (COs)

- Students are able to understand the basic concept of Logical and Critical Thinking
- Students are able to solve problems
- Student analytical ability increased.
- Student can be placed in service based company, government sector, PSU and it will also help in higher study.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium	Low		Low		Medium	Medium
CO2	High	High	Medium	Medium	Low		Medium	Medium		Medium
CO3	High	High	Medium	Medium	Medium	Low	Medium	Medium	Medium	Medium
CO4	Medium	Medium	Medium	Medium		Low	Low		Medium	High

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BSCIT (Honours) Programme

Semester II

Course Title: Environmental Studies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
VAC	VAC230201	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	-

Course Outcomes (COs)

- Enabling students to understand and realize the multi- disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- Understanding the relevance and importance of natural resources in the sustenance of life on earth and living standard. the importance of ecosystem, biodiversity, and nature.
- Correlating the human population growth and its trend to the environmental degradation and developing the awareness about his/her role towards environmental protection.
- Identifying different types of environmental pollution and control measures.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Medium	Medium	Low		Medium	Medium	Medium
CO2	High	High	Medium	High	Medium	Low		Medium	Medium	High
CO3	Medium	High	Medium	Medium	Low	Low		Medium	Medium	High
CO4	High	Medium	Medium	Medium	Medium	Low	Low	Medium	Medium	Medium

BSC-IT (H)
SEMESTER-III

Swarrnim School of Computing & IT

B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester III

Course Title: RELATIONAL DATABASE MANAGEMENT SYSTEM

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT2High0 High01	4	75	20%	10%	20%	30%	20%

Course Outcomes(COs)

1. Understand the fundamental concepts of database systems, including data models, database architecture, and data independence.
2. Gain proficiency in SQL for data definition, manipulation, and query operations in a relational database.
3. Design database schemas using normalization principles and ER modeling.
4. Implement transaction processing, concurrency control mechanisms, and ensure database security.
5. Analyze performance tuning concepts and apply optimization techniques for efficient query processing.

CO-PO Mapping for Database Management System:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Low		Low			Low	Medium
CO2	Medium	High	High	Medium			Low		Medium	Medium
CO3	High	High	High	Medium	Medium	Low	Medium	Low	Medium	High

CO4	Medium	Medium	High	High	Medium		Low	Medium	High	Medium
CO5	Low	High	High	Medium	Low	Medium	Low	Low	Medium	High

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B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester III

Course Title: OPERATING SYSTEM

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230302	4	75	20%	10%	20%	30%	20%

Course Outcomes(COs) :

1. Understand the core concepts and functio:nalities of operating systems including processes, threads, and memory management.
2. Analyze different scheduling algorithms and their application in managing processes and system resources.
3. Master the implementation and management of memory, including virtual memory and paging mechanisms.
4. Explore file system architecture, management, and disk scheduling algorithms.
5. Evaluate different operating systems such as Windows, UNIX, and Linux, understanding their internal operations and design principles.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Low						Low
CO2	Medium	High	High	Low	Low		Low			Medium
CO3	Medium	High	High	Low				Low	Low	Medium
CO4	Medium	Medium	Medium	Medium	Low		Low			Medium
CO5	Medium	Medium	Low	High	Low	Medium	Medium		Low	High

Swarrnim School of Computing & IT

B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester III

Course Title: PYTHON PROGRAMMING

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
Core	BSCIT230303	4	75	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	10%	20%	30%	20%

Course Outcomes(COs):

1. Acquire comprehensive knowledge of Python syntax, semantics, and its application in solving real-world problems.

2. Develop proficiency in using Python's data structures, functions, and modules to create efficient programs.

3. Apply object-oriented programming principles in Python to design robust and reusable software.

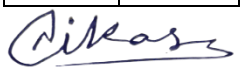
4. Utilize Python libraries and frameworks for web development, data analysis, and machine learning.

5. Implement error handling and debugging techniques to develop reliable and error-free code.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO 8	PO9	PO10
CO1	High	Medium	High	Low						Medium
CO2	High	High	Medium	Low	Low					Medium
CO3	Medium	High	High	Medium	Medium		Low		Low	High
CO4	Medium	High	Medium	Medium	Low	Medium	Medium	Low	Low	High

CO5	Medium	High	High	High		Low	Low	Low	Medium	High



Swarrnim School of Computing & IT

B. SC.- IT (Honors) Programme

B. SC.- IT Semester III

Course Title: Financial Literacy

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
AEC	AEC230303	2	30	Theory	Continuous Assessment	Practical	Theory	Practical
				20%	30%	-	50%	-

Course Outcomes(COs)

1. Increasing familiarities with financial literacy and its different aspects.
2. Leading them towards financial wellbeing by teaching to manage their money.
3. Making them literate about the personal tax structure of India
4. Enable them to understand the process of tax e filing

CO-PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Low							High
CO2	High	Medium	Low	Low						High
CO3	High	Medium	Medium						Low	High
CO4	High	High	High	Low	Low				Low	High

Swarrnim School of Computing & IT

B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester III

Course Title: Computer Organization

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
MDC	BSCIT230304	4	60	**Theory**	**Continuous Assessment**	**Practical**	**Theory**	**Practical**
				20%	**30%**	**-**	**50%**	**-**

Course Outcomes(COs):

1. Understand the basic structure and operation of modern computers.

2. Grasp the function and design of the central processing unit (CPU) and memory hierarchy.

3. Explain the concepts of input/output (I/O) systems and data communication between system components.

4. Analyze and design simple digital circuits and understand how they form the building blocks of computer systems.

5. Develop assembly level programs and comprehend the interface between hardware and software.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Medium		Low				Medium
CO2	High	High	High	Medium	Medium	Low			Low	Medium
CO3	Medium	High	High	High	Low	Medium		Low	Medium	Medium
CO4	High	High	High	Medium	Medium	Low	Low		Medium	High

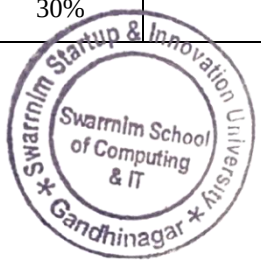
CO5	Medium	High	Medium	High	Low	Medium	Medium		Medium	High

Swarrnim School of Computing & IT
B. Sc.- IT (Honors) Programme

B. Sc.- IT Semester III

Course Title: Marketing Strategies for Start Ups

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
SEC	SEC230303	2	30	20%	30%	-	50%	-



Course Outcomes (COs)

1. Exploration of Marketing basics in real world
2. Understanding customer ways of reacting to marketing and various types of customers.
3. Understanding Brand and its importance as well as various techniques of Integrated marketing. Exploration of the new buzz social marketing basics

CO PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	High	Medium	High	High	High	High	Medium	Medium	High
CO2	Medium	Medium			High	Medium	Medium	High	High	High

CO3	High	High		Low	Medium	High	Medium	High	High	High

Swarrnim School of Computing & IT
B. Sc.- IT (Honors) Programme

B. Sc.- IT Semester III

Course Title: Understanding India

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
IKS	IKS230303	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

1. To understand the meaning and important of Indian Knowledge System
2. To identify the Actual foundational concepts for science and technology.
3. To understand the values of Humanities and Social Science.

CO PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	High	Medium	High	High	High	High	Medium	Medium	High

CO2	Medium	Medium	Low		High	Medium	Medium	High	High	High
CO3	High	High			Medium	High	Medium	High	High	High

BSC-IT (H)
SEMESTER-IV

Swarrnim School of Computing & IT

B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester IV

Course Title: Cloud Computing

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230401	4	75	20%	10%	20%	30%	20%

Course Outcomes(COs):

1. Understand the basic concepts and architecture of cloud computing including different service models (IaaS, PaaS, SaaS) and deployment models (public, private, hybrid, community).

2. Analyze the benefits and challenges of cloud computing including scalability, reliability, and security concerns.

3. Gain practical experience in using major cloud platforms such as AWS, Azure, and Google Cloud for deploying applications.

4. Understand and apply cloud storage, computing, and networking services in real-world applications.

5. Evaluate the impact of cloud computing on business transformation and IT infrastructure.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	Medium	Low	Low					Medium
CO2	Medium	High	High	Medium	Medium	Medium			Low	Medium
CO3	Low	High	Medium	Medium		Medium	Medium		Medium	High
CO4	Medium	High	High	High	Medium	Medium	Medium		Medium	High
CO5	Medium	High	Medium		High	Medium	High	Low	Medium	High

Swarrnim School of Computing & IT

B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester IV

Course Title: Information Security

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230402	4	75	20%	10%	20%	30%	20%

Course Outcomes(COs):

1. Understand the fundamental principles of information security including confidentiality, integrity, and availability.

2. Identify security threats, vulnerabilities, and countermeasures.

3. Implement cryptographic techniques for securing data both at rest and in transit.

4. Design and enforce security policies and procedures to protect information assets.

5. Evaluate the impact of ethical, legal, and regulatory issues on information security.

CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Low					Low	Medium
CO2	Medium	High	High	Medium	Low				Low	Medium
CO3	Medium	High	High	Medium		Low		Low	Low	High
CO4	Medium	High	High	High	Medium		Medium	Low	Medium	Medium
CO5	Low	Medium	High	High		Low		Medium	High	High

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B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester IV

Course Title: Software Testing

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	BSCIT230403	4	60	20%	30%	-	50%	-

Course Outcomes (COs):

1. Understand the principles and methodologies of software testing, including static and dynamic testing techniques.

2. Develop test cases and test plans for software applications to ensure functionality, reliability, and robustness.

3. Apply various testing tools and environments to perform unit testing, integration testing, system testing, and acceptance testing.

4. Analyze software testing automation, learn scripting for automated tests, and use of automation tools.

5. Evaluate software quality and the effectiveness of testing through metrics and software quality assurance practices.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Low						Medium
CO2	Medium	High	High	Medium	Medium				Low	Medium
CO3	Medium	High	Medium	High			Low		Medium	High
CO4	Low	High	High	Medium	Low		Medium		Medium	High
CO5	Medium	Medium	High		Medium			Low	High	High

Swarrnim School of Computing & IT

B. Sc.-IT (Honours) Programme

B. Sc.-IT Semester IV

Course Title: Data Science

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Minor	BSCIT230404	4	75	20%	10%	20%	30%	20%

Course Outcomes(COs):

1. Understand the foundational concepts of data science and its significance in extracting meaningful insights from data.
2. Develop skills in data manipulation, cleaning, and visualization using tools like Python, R, and SQL.
3. Apply statistical methods and machine learning algorithms to solve predictive modeling problems.
4. Master the use of big data technologies for handling large datasets efficiently.
5. Evaluate ethical, legal, and social implications of data science in various sectors.

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CO-PO Mapping:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	Medium	High	Low		Low			Low	Medium
CO2	Medium	High	Medium	High	Low				Low	High
CO3	Medium	High	High	Medium	Low	Medium			Medium	High
CO4	Medium	High	Medium	Medium	Low	Medium	Medium	Low	Low	High
CO5	Low	Medium	High	High		Low		High	High	Medium

Swarrnim School of Computing & IT
B. Sc.- IT (Honors) Programme

B. Sc.- IT Semester IV

Course Title: Soft Skills

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
Core	AEC23040	2	30	20%	30%	-	50%	-

Course Outcomes (COs)

1. Learners should understand the nuance of communication at workplace
2. The learners will be able to create various forms of business letters
3. The learners will be able to create various forms of business reports

CO PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	Medium	High	Medium	High	High	High	High	Medium	Medium	High
CO2	Medium	Medium			High	Medium	Medium	High	High	High
CO3	High	High			Medium	High	Medium	High	High	High

Swarrnim School of Computing & IT

B. Sc.- IT (Honours) Programme

B. Sc.- IT Semester IV

Course Title: Emerging Technologies

Category of Course	Course Code	Credit	Contact Hours	Internal			External	
				Theory	Continuous Assessment	Practical	Theory	Practical
VAC	VAC230404	2	30	-	20%	30%	-	50%

Course Outcomes (COs)

1. Learners should be able to understand the concept and application..
2. Learners should be able to apply the tools, functions in Power BI and Tableau at the beginners level
3. Learners should be able to create a dashboard.

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CO PO Mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	High	High	High	Medium	Low	High				High
CO2	Medium	Medium	Medium	Medium	Medium	High	Medium			High
CO3	High	High	High	High	Medium	High			Low	High