SDGI GLOBAL UNIVERSITY

PROGRAMMESTRUCTURE

SCHOOLOFCOMPUTER APPLICATIONS

BCA(HONS) WITH SPECIALIZATION
AI/ML/Data science /Cyber Security

PROGRAMMECODE:CA08/11/09

BATCH W.E.F: 2025-2029

VisionoftheUniversity

To be recognized as an Institution of excellence, facilitating learning, fostering creativity, knowledge creation, innovations, consultancy and leadership in multiple areas to build a conscious community that will positively impact living beings for a sustainable future.

MissionoftheUniversity

1. To create conducive environment for an interactive and application oriented experiential learning making the Institute a preferred destination for work and study.
2. To Foster creativity, research and innovation orientation in students and faculty in basic and applied areas in all of its disciplines, provide cost effective solutions and nurture entrepreneurial capabilities to accelerate growth.
3. To act as a catalyst in social change by developing academic, social, political, technological, scientific, industrial and business leadership in the spirit "Think Globally and Act Locally"; by providing ample opportunities to develop team spirit, sportsmanship and love for culture and national heritage.

Core Values

1. **Integrity**
2. **Honesty**
3. **Transparency**
4. **Empathy**

School of Computer Applications

Vision of School

To be a premier institution in computing sciences, recognized for pioneering research, transformative education, and impactful contributions to society, shaping the future of technology and driving positive.

Mission of School

To empower students with cutting-edge knowledge and skills in computing sciences, foster a culture of innovation, and prepare them to address the challenges of a rapidly evolving digital world through rigorous academics, experiential learning, and interdisciplinary collaboration.

CoreValues

1. Excellence
2. Innovation
3. Sustainability
4. Global Perspective

ProgrammeEducationalObjectives(PEO's)

BCA(Hons) with specialization Data Science/Cloud Computing

PEO-1 The graduates will establish themselves as professionals by solving real-life problems using exploratory and analytical skills acquired in the field of Computer Applications

PEO-2 The graduates will provide sustainable solutions to ever changing interdisciplinary global problems through their Research & Innovation capabilities.

PEO-3 The graduates will become employable, successful entrepreneur as an outcome of Industry-Academia collaboration.

PEO-4 The graduates will embrace professional code of ethics while providing solution to multidisciplinary social problems in industrial, entrepreneurial and research environment to demonstrate leadership qualities.

ProgrammeOutcomes(PO's):

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

ProgrammeSpecificOutcomes(PSO):

PSO1: Experiment and prepare programming concepts and provide new ideas and innovations towards research and societal issues.

PSO2: Analyse and develop computer programs in the areas related to algorithms, system software, cloud computing, artificial intelligence & machine learning, bioinformatics, big data analytics, block chain, cyber security and networking for efficient design of computer-based systems of varying complexity.

PSO3: Apply standard Software Engineering practices and strategies in software project development using open-source programming environment to deliver a quality product for business success.

BCA (HONS)
WITHSPECIALIZATION
AI/ML, /Cyber Security/Data science

TITLE: FourYearProgrammeStructurefor BCA (Hons)

DURATIONOFTHECOURSE:4 Years

TotalCredits-164

Totalcreditofthe04-yearUGProgrammeforyear wise	01stYear	44
	02ndYear	40
	03rdYear	40
	04thYear	40

Multiple Entry and Exit Structure for BCA(Hons):

1. Certificate (After 1 Year)
Duration:1 year (2 semesters)
Credits: 40–44 credits
Award: Certificate in Computer Applications
Exit Option: Students can exit with a certificate and re-enter the program later.
2. Diploma (After 2 Years)
Duration: 2 years (4 semesters)
Credits: 80–88 credits
Award: Diploma in Computer Applications
Exit Option: Students can exit after 2 years with a diploma.
3. Bachelor's Degree (After 3 Years)
Duration: 3 years (6 semesters)
Credits: 120–132 credits
Award: Bachelor of Computer Applications (BCA)
Exit Option: Students can exit with a standard bachelor's degree after 3 years.

4. Bachelor's (Honors) Degree (After 4 Years)
Duration:4 years (8 semesters)

Credits: 160–176 credits
Award: Bachelor of Computer Applications (Honors) – BCA(Hons)
Exit Option: Final exit with a BCA(Hons) degree.
Learning Focus: Specialized electives in AI, data science, machine learning, cloud computing, and a research project or dissertation.
Re-entry Options:Students who exit the program can re-enter at the same or a higher level after a gap, as long as they meet the institution's requirements, without needing to start over.

SDGI GLOBAL UNIVERSITY, GHAZIABAD (SGU)

Semester-WiseTeachingScheme UG Program

Programme: BCA (Hons)

Semester:I

Batch – 2025 – 29

Academic year: 2025 - 26

S. No	Status	Paper Code	Subjects	Study Scheme Lec / Week			Hours	Credits	CIE	ESE	Total	Pass Marks
				L	T	P						
1	CC-1	B021223101	Computer Concepts & Programming in C	4	0	0	4	4	50	50	100	40
2	CC-2	B021223102	Foundation of Mathematics	4	0	0	4	4	50	50	100	40
3	CC Lab	B021223151	Programming in 'C' lab	0	0	2	2	1	60	40	100	40
4	DSC-1 (Minor)	B021223103	Web designing using DHTML (Minor)	3	0	0	3	3	50	50	100	40
5	DSC Lab	B021223153	Web designing using DHTML Lab (Minor)	0	0	2	2	1	60	40	100	40
6	OE-1	BSGUOE2422	Principles and Practices of Management	3	0	0	3	3	50	50	100	40
7	AEC-1	BSGUAE2404	Professional Communication	2	0	0	2	2	50	50	100	40
8	SEC-1	BSGUSE2411	Advanced Excel	2	0	0	2	2	25	25	50	20
9		BSGUSE2461	Advanced excel Lab	0	0	2	2	1	30	20	50	20
9	VAC-1	BSGUVA2401	Environmental Education	3	0	0	3	3	50	50	100	40
			Total	21	0	6	27	24	475	425	900	360

CC - Core Course
OE - Open Elective/ Multidisciplinary
AE - Ability Enhancement Compulsory Course
VAC - Value Added Course
SE - Skill Enhancement
DSC-Discipline specific course

Bridge Course				
I	BSGUBR2401	Mathematics	Hrs-30	Bridge

NOTE: Non – Creditable Subject

DETAILED SYLLABUS

Programme: BCA (Hons)

Computer Concepts & Programming in C
(CourseCode:**B021223101**)

	L	T	P	C
Semester:Ist	**4**	**0**	**0**	**4**

COURSEOBJECTIVES
Toacquirethefundamentalprinciples,conceptsandconstructsofcomputerprogramming
Todevelopcompetencyforthedesign,codinganddebugging
Tobuildtheprogrammingskillsusing'C'tosolverealworldproblems

CourseOutcome(CO)		**Bloom'sKnowledge Level(KL)**
Attheendof course,thestudentwill be abletounderstand		
CO1	ToFocusFundamentalsofComputersandPeripherals .	K_3
CO2	To Introduce programming language and aware the students about programming paradigm	K_3, K_4
CO3	ToFocusConceptandMethodologyofProgramming.	K_2, K_3
CO4	To give clear idea of different strategy of basic programming with C like Looping, Decision Making, Array, Structure	K_2,K_4
CO5	Function, Pointer, etc. to solve real life problems.	K_3, K_6

Unit-1

Introduction to Programming: Introduction, Basic block diagram and functions ofvarious components of computer, Concept of Hardware and Software, Types ofsoftware,Compiler and Interpreter.Introduction to Programming: Basic Overview of Procedure Oriented Language,Concepts of Machine level, Assembly level and High level programming, FlowchartsandAlgorithms.

Unit-2

Fundamentals of 'C':Features of C language, structure of C program, comments, header files, data types, constants and variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions.Control Structures in 'C': Simple statements, Decision making statements, Looping statements, Nesting of control structures, break and continue statement, goto statement.

Unit-3

Array, Functions & Recursion: Array & String: Concept of array, One and Two dimensional arrays, declaration and initialization of arrays, String, String storage, Built-in string functions.
Functions: Concept of user defined functions, prototype, definition of function, parameters, parameter passing, calling a function, Macros, Preprocessing.Recursion: Definitions, recursive function, Examples, Applications.

Unit-4

Pointers: Basics of pointers, pointer to pointer, pointer and array, pointer to array, array of pointers, function returning a pointer.

Structure and Union : Basics of structure, structure members, accessing structure members, nested structures, array of structures, structure and functions, structures and pointers, unions, bit-fields.

Unit-5

File Management

Introduction to file management, Simple file management functions for text files, Reading from and writing to files.

The Preprocessor: Introduction, Macro substitution, File Inclusion, Compiler Control Directives

TEXTBOOKS:

1.ProgramminginANSIC,ForthEdition,EBalagurusamy,TMH

2.ReferenceBooks:LetusC,YashwantKanitkar

3.CTheCompleteReference,HerbertSchildt,McGrawHill

Reference Book:

1,ComputerfundamentalsandProgramminginC,PradipdeyandManasGhosh,Oxford

Foundation of Mathematics

(CourseCode:B021223102)

Year:1st **L T P C**

Semester:1st **4 0 0 4**

COURSEOBJECTIVES
To acquire the fundamentals of Matrix theory and its use to find the nature of solution of system of equations
To built the skills in Limit, continuity and Differentiability and its applications
To develop the idea of vector calculus and multiple integration.

CourseOutcome(CO)		**Bloom'sKnowledge Level(KL)**
Attheendof course,thestudentwill be abletounderstand		
CO1	**Students will know the solution of system of equations, rank, eigen value, eigenvector and aracteristic polynomial.**	**K_3**
CO2	**Student will able to understand the concept of limit, continuity also its applications.**	**K_3, K_4**
CO3	**After the completion of unit students knows the concept of differentiability and its application.**	**K_2, K_3**
CO4	**After the completion of vector, students know what is vector and what are its uses such as gradient, divergence, and curl.**	**K_2,K_4**
CO5	**Apply integration to compute multiple integrals, area volume, integral in polar coordinate in addition to change of order.**	**K_3, K_6**

Unit 1

LinearAlgebra :LinearAlgebra-Matrices:Rankofamatrix,Consistencyofasystemoflinearequations,Lineardependenceandindependence ofvectors,Eigen-valuesandEigenvectorsofamatrix,Cayley-Hamilton theorem,Determinants

Unit2

LimitsandContinuity :DefinitionofLimits,Lefthandandrighthandlimit, usefulformulaeinfindingthelimitsofcertainFunctions,Definitionofcontinuity,Propertiesofcontinuousfu nctions,TypesofDiscontinuity,Removablediscontinuity,Discontinuityoffirstkindandsecondkind

Unit3

Differentiation : Differentiabilityofafunction,Rolle'stheorem,Lagrange'smeanValuetheorem,Taylor'stheorem,Maclaur in'stheorem,IndeterminateForms,L'HospitalsRule,MaximaandMinima,curvetracing

Unit4

VectorAlgebra :Introduction,RepresentationofvectorAdditionandsubtractionofvectors,DoubleandTripleScalarandVec torProduct anditsProperties,SystemofreciprocalofVectors,Gradient, Divergenceandcurlofavector

Unit5

Integration Integration as inverse process of differentiation, Integration of a function by substitution, by partial fractions and by parts. Evaluation of simple integrals of the following types and problems based on them

Text Books: 1. GrewalB.S.,HigherEngineeringMathematics,DelhiKhannaPublishers.
2.DifferentialCalculusbyShantiNarayan,PublishersS.Chand&Co.
Reference book: 3. HKDAS"AdvancedEngineeringMathematics"s.chandandcompany

Web designing using DHTML
(CourseCode: B021223103)

Year:1st | **L T P C**
Semester: 1st | **3 0 0 3**

COURSEOBJECTIVES
To acquire the fundamentals of Web page design and about types of websites
To build the skills in HTML, CSS and JavaScript.
To Understand the basic concept of SEO

CourseOutcome(CO)		Bloom'sKnowledge Level(KL)
Attheendof course,thestudentwill be abletounderstand		
CO1	Understand principle of Web page design and about types of websites	K3, K4
CO2	Visualize and recognize the basic concept of HTML and application in web designing.	K_1, K_2
CO3	Recognize and apply the elements of Creating Style Sheet (CSS).	K_2, K_4
CO4	Understand the basic concept of Java Script and its application.	K_2,K_3
CO5	Introduce basics concept of Web Hosting and apply the concept of SEO.	K_3, K_2

Unit1 Introduction

Introduction: Internet and World Wide Web (WWW); Evolution and History of World Wide Web, Web Pages and Contents, Web Clients, Web Servers, Web Browsers; Protocols Governing Web, URLs; Introduction to client-server computing; Introduction to Markup Languages (HTML and DHTML).

Unit2 Web Development

HTML Document Features, Fundamentals HTML Elements, Creating Links; Headers; Text styles; Text Structuring; Text colour and Background; Formatting text; Page layouts, Images; Ordered and Unordered lists; Inserting Graphics; Table Creation and Layouts; Frame Creation and Layouts; Working with Forms and Menus; Working with Radio Buttons; Check Boxes; Text Boxes. Document type definition, XML: DTD, XML schemes, Object Models, presenting and using XML.

Unit 3 Introduction to CSS

Features, Core Syntax, Types, Style Sheets, StyleRule Cascading and Inheritance, Text Properties, CSS Box Model, Normal Flow Box Layout, Positioning and other useful Style Properties.

Unit4 Introduction to Java Script

Objects, Methods, Events and Functions, Tags, Operators, Data Types, Literals and Type Casting in JavaScript, Programming Construct, Array and Dialog Boxes, Relating JavaScript to DHTML, Dynamically Changing Text, Style, Content.

Unit5 Core Java

Core Java: Introduction, Operator, Data type, Variable, Arrays, Methods & Classes, Inheritance, Package and Interface, Exception Handling, Multithread programming.Java Server Pages (JSP): Introduction, Java Server Pages Overview, A First Java Server Page Example, Implicit Objects, Scripting, Standard Actions, Directives,

Text Books:1. Burdman,Jessica,"CollaborativeWebDevelopment"AddisonWesley

1. Xavier,C,"WebTechnologyandDesign",NewAgeInternational
2. IvanBayross,"HTML,DHTML,JavaScript,Perl&CGI",BPBPublication
3. Bhave,"ProgrammingwithJava",PearsonEducation

Reference Book:1.HerbertSchieldt,“TheCompleteReference:Java”,TMH.
2.MargaretLevineYoung,“TheCompleteReferenceInternet”,TMH

Professional Communication

(CourseCode:**BSGUAE2404**)

Year:1st	**L**	**T**	**P**	**C**
Semester:1st	**20**	**0**	**2**	

COURSEOBJECTIVES
To acquire the fundamentals of effectiveCommunication.
To build the skills in Business Correspondence.
To Understand the basic concept of Oral Presentation and report writing.

CourseOutcome(CO)		**Bloom'sKnowledge Level(KL)**
Attheendof course,thestudentwill be abletounderstand		
CO1	**Understand principle of Communication.**	K_1
CO2	**Recognize the basic concept of Letter Writing, presentation, inviting quotations, sending quotations, placing orders.**	K_2, K_3
CO3	**Apply the concepts for report writing.**	K_2, K_4
CO4	**Understand the need to enhance the vocabulary.**	K_2,K_3
CO5	**Introduce basics concept of oral representation.**	K_3, K_2

Unit1

Communication

Introduction: Nature of Communication, Process of Communication, Types of Communication (verbal & Non-Verbal), Importance of Communication, Different forms of Communication, Effective principles of Communication, 7 C's. Barriers to Communication Causes, Linguistic Barriers, Psychological Barriers, Interpersonal Barriers, Cultural Barriers, Physical Barriers, Organizational Barriers.

Unit2

Business Correspondence

Letter Writing, presentation, inviting quotations, sending quotations, placing orders, inviting tenders, Sales letters, claim & adjustment letters and social correspondence, Memorandum, Inter - office Memo, Notices, Agenda, Minutes of meeting, Job application letter, preparing the Resume.

Unit 3

Report Writing

Business reports, Types, Characteristics, Importance, Elements of structure, Process of writing, Order of writing, the final draft, and check lists for reports.

Unit4

Vocabulary

The process of formal written Communication (deciding purpose, analyzing audience, designing a massage, organizing, selecting, arranging ideas and preparing outlines, developing massage) The qualities of good writing-clarity-conciousness-concisness-correctness-coherance-courtiousness.

Unit5

Oral Presentation

Oral Presentation: Importance, Characteristics, Presentation Plan, Power point presentation, Visual aids. Corporate Communication Formal and Informal Communication Networks; Grapevine;

Miscommunication (Barriers); Improving Communication. Business Ettiquetes

TextBooks :1. Bovee, and Thill, Business Communication Essentials, Pearson Education
2. Shirley Taylor, Communication for Business, Pearson Education
3. Locker and Kaczmarek, Business Communication: Building Critical Skills, McGraw Hill Education

ReferenceBooks: 1. Herta A Murphy, Herbert W Hildebrandt, Jane P. Thomas, Effective Business Communication (SIE), McGraw Hill Education
2. Dona Young, Foundations of Business Communication: An Integrative Approach, McGraw Hill Education

Principles and Practices of Management

(CourseCode:**BSGUOE2422**)

Year:1st	**L**	**T**	**P**	**C**
Semester:1st	**3**	**0**	**0**	**3**

COURSEOBJECTIVES
To acquire the fundamentals of professionalmanagement
To understand the Business Ethics & Social Responsibility .
To Understand the models for change &Strategic Management

CourseOutcome(CO)		**Bloom'sKnowledge Level(KL)**
Attheendof course,thestudentwill be abletounderstand		
CO1	**Understand the concepts of management such as administration, organization and management etc skills.**	K_2
CO2	**Recognize the basic concept of evolution of management thought.**	K_2, K_3
CO3	**Apply the concepts of planning, identify barriers to effective planning, levels, advantages & limitations.**	K_2, K_4
CO4	**Understand the basics of motivation, controlling and coordination among team.**	K_2,K_3
CO5	**The basics concepts of Strategic management.**	K_3, K_2

Unit 1

Introduction :NatureofManagement:Meaning,Definition,nature&purpose,importance&Functions,ManagementasArt, Science&Profession-ManagementassocialSystemConceptsofmanagement-Administration-Organization,ManagementSkills,LevelsofManagement.

Unit-2

Evolution of Management :EvolutionofManagementThought:ContributionofF.W.Taylor,HenriFayol,EltonMayo,ChesterBarhard& PeterDruckertothemanagementthought.BusinessEthics&SocialResponsibility:Concept,ShifttoEthics,ToolsofEthics.

Unit-3

Functions of Management: Part-I : PlanningMeaning-Need&Importance,types,ProcessofPlanning,BarrierstoEffective Planning,levels, advantages&limitations.Forecasting-Need&Techniques,Decisionmaking Types - Processofrationaldecisionmaking&techniquesofdecisionmaking,organizing– Elementsoforganizing&processes:Typesoforganizations,Delegationofauthority–Need, difficulties,Delegation–Decentralization.Staffing–Meaning&ImportanceDirection–Nature, PrinciplesCommunication–Types&Importance

Unit-4

Functions of Management: Part-II : Motivation–Importance–theories,Leadership–Meaning– styles,qualities&functionofleader,Controlling-Need,Nature,importance,Process&Techniques,TotalQualityManagement,Coordination–Need – Importance

Unit-5

Management of Change : ModelsforChange,ForceforChange,NeedforChange,AlternativeChange,Techniques,NewTrendsinOrga

nizationChange.StrategicManagement:Definition,ClassesofDecisions,LevelsofDecision,Strategy,Roleo fdifferentStrategist,RelevanceofStrategicManagementanditsBenefits,StrategicManagementinIndia

TextBooks:1. Drucker, F. Peter - Management-Tasks, Responsibilities & Practices.
2. Koontz "O" DonnelWeihrich - Elements of Management.
3. Koontz H, "O" Donnel C - Management-A Book of Reading.

ReferenceBooks1. Drucker, F. Peter - The Practice of Management.

COURSEOBJECTIVES
Provide foundational knowledge of ecological principles and human-environment interactions.
Develop understanding and critical analysis of key environmental challenges and their solutions.
Encourage the adoption of sustainable practices and an understanding of sustainable development principles.

Environmental Education

(CourseCode:**BSGUVA2401**)

Year:Ist **L T P C**

Semester:Ist **3 0 0 3**

CourseOutcome(CO)		Bloom'sKnowledge Level(KL)
Attheendof course,thestudentwill be abletounderstand		
CO1	to critically examine all sides of environmental issues and apply understanding from different disciplines to create informed opinions about how to interact with the environment on both a personal and a social level.	K_2
CO2	Recognize the basic concept of renewable and non-renewable resources.	K_2, K_3
CO3	Understand the concepts of Structure and function of an ecosystem.	K_2, K_4
CO4	Understand the biodiversity at global, national and local levels.	K_2,K_3
CO5	Recognize the impact of human population on the Environment.	K_3, K_2

Unit 1:

Introduction to Environmental Studies: Overview of Environmental Studies, Definition and scope, Importance and relevance in contemporary society, Key Environmental Concepts, Ecosystems, biodiversity, and ecological balance, Natural resources: types, distribution, and importance, Human-Environment Interaction, Historical perspective on human impact on the environment, Cultural and societal influences on environmental attitudes.

Unit 2:

Ecological Principles and Processes:

Ecosystem Dynamics, Structure and function of ecosystems, Energy flow and nutrient, cycles (carbon, nitrogen, water), Biodiversity and Conservation, Types of biodiversity and their importance, Threats to biodiversity and conservation strategies, Population Ecology, Population dynamics and carrying capacity, Human population growth and its impact on the environment.

Unit 3:

Environmental Pollution and Management

Air and Water Pollution, Sources and types of pollutants, Effects on health and the, environment, Control and management strategies, Soil and Land Pollution, Causes and consequences of soil degradation, Waste management: types, disposal methods, and reduction, Global Environmental Issues, Climate change: causes, effects, and mitigation, Ozone depletion and acid rain.

Unit 4:

Natural Resources and Sustainable Development

Renewable and Non-renewable Resources, Definition, examples, and management, Sustainable use and conservation of resources, Energy Resources, Conventional and alternative energy sources, Environmental impact of energy production and consumption

Principles of Sustainable Development, Concepts and goals of sustainability, Integrating economic, social, and environmental considerations.

Unit 5:

Environmental Policy, Ethics, and Advocacy: Environmental Laws and Policies, Key national and international environmental laws, Role of government and NGOs in environmental protection, Environmental Ethics, Ethical perspectives on, environmental issues, Responsibility and stewardship towards nature, Environmental Advocacy and Communication, Public awareness and education strategies, Role of media, activism, and community involvement in environmental issues.

Text Book:1."Environmental Studies: From Crisis to Cure" by R. Rajagopalan

2."Ecology: Concepts and Applications" by Manuel C. Molles

Reference book: 1."Environmental Science: A Global Concern" by William P. Cunningham and Mary Ann Cunningham.

Programming in 'C' lab

COURSEOBJECTIVES
To introduce students to the basic concepts of C programming, including syntax, data types, and fundamental operations, and to develop proficiency in writing and compiling simple C programs.
To enable students to apply programming constructs such as control flow, operators, arrays, strings, structures, pointers, and file handling to solve problems and create functional programs.

(CourseCode:**B021223151**)

Year:1st

Semester:1st

L	T	P	C
0	0	4	2

CourseOutcome(CO)		Bloom'sKnowledge Level(KL)
Attheendof course,thestudentwill be abletounderstand		
CO1	Set up the Turbo C environment, write, compile, and execute basic C programs, and use scanf and printf for input and output operations.	K_1
CO2	Implement decision-making using if/else statements and switch cases, and control program flow with loops such as while and do...while.	K_1, K_2
CO3	Use a variety of operators (increment/decrement, modulus, bitwise) effectively in programs to perform different operations.	K_2, K_3
CO4	Develop programs utilizing one-dimensional and two-dimensional arrays, and perform string manipulations using standard string functions.	K_3
CO5	Understand and implement advanced concepts such as unions, structures, pointers, and file handling for data management and storage in C programs.	K6

List of Experiments (Indicative & not limited to)

1. BasicIntroductiontoCprogramandturboCsetup(Compile/Runprogram).
2. Simpleprogramusingscanf/printf.
3. Programusingif/else.
4. Programusingoperators(++,--,%,&,|,etc).
5. Switchcaseprograms.
6. Programsofloops(whileloop)Programsofloops(do…whileloop).
7. Simpleprogramofone-Dimentional/2-Dimensionalarray.

8. StringPrograms(using a11 stringfunctions).

9. Programto implement union and structures.

10. Programto demonstrate working of pointers.

11. Programtoreaddatafromfileandwriteintoafile.

Web designing using DHTML Lab

(CourseCode:**B021223153**)

COURSEOBJECTIVES
To introduce students to the basic concepts and technologies used in web designing, including HTML, CSS, and JavaScript, and to understand the structure and functionality of web pages
To enable students to apply Dynamic HTML (DHTML) techniques, including Document Object Model (DOM) manipulation, CSS styling, and JavaScript programming, to create interactive and responsive web pages.

Year:Ist	**L**	**T**	**P**	**C**
Semester:Ist	**0**	**0**	**2**	**1**

CourseOutcome(CO)		**Bloom'sKnowledge Level(KL)**
Attheendof course,thestudentwill be abletounderstand		
CO1	**Develop and structure basic web pages using HTML.**	**K_1**
CO2	**Apply CSS for styling and layout of web pages.**	**K_1, K_2**
CO3	**Use JavaScript to add interactivity to web pages.**	**K_2**
CO4	**Manipulate the DOM to dynamically update content and style.**	**K_3**
CO5	**Integrate DHTML techniques to create interactive and responsive web designs.**	**K4**

List of Experiments (Indicative & not limited to

1.WriteHTML/JavascriptstodisplayyourCVinnavigator,yourInstitutewebsite,DepartmentWebsitean dTutorialwebsiteforspecificsubject.
2.WriteanHTMLprogramtodesignanentryformofstudentdetails
3.WritingprograminCSStodisplayhovereffect.
4.WritingprograminXMLforcreationofDTD,whichspecifiessetofrules.Createastyles heetinCSS/XSL&displaythedocument.
5.WriteprogramsusingJavascriptforWebPagetodisplayallpopbox.
6.Writeaprogramusingjavascripttodisplayapplication Programcalculator.
7.Writeaprogramtoshowtheuseexceptionhandlingusingjava
8.Assumefourusersuser1,user2,user3anduser4havingthepasswordspwd1,pwd2,pwd 3andpwd4respectively.Writeajspfordoingthefollowing.CreateaCookieandaddthese fouruserid'sandpasswordstothisCookie.2.Readtheuseridandpasswordsenteredinthe Loginformandauthenticatewiththevaluesavailablein thecookies.
9.WriteaJSPwhichinsertthedetailsofthe3or4userswhoregisterwiththewebsitebyusingr egistration form. Authenticate the user when he submits the login form using the user nameandpasswordwithout usingcookies.
10.Designsimplewebsitefore-commerceusingsessiontracking.

ADVANCED EXCEL

(Course Type: Skill Enhancement)

(Course Code: BSGUSE2411)

Credit[L T P]

3 1 0 4

Course Objectives: After completion of the Advanced Excel course Student will be able to Use Excel functions and productivity tools to assist in developing worksheets.

Course Outcome (CO)		Bloom's Level
At the end of course, the student will be able		
CO 1	To understand the concept of look-up functions in Excel	**BL2**
CO 2	To gain the practical knowledge of worksheet	**BL3**
CO 3	To gain the practical knowledge of Excel Function & Formulas	**BL3,4**
CO 4	To gain the practical knowledge of Financial modelling in Excel	**BL3,4**

Unit	Topic
1	Conditional Formatting - Inbulit Conditional Formatting, Custom Conditional Formatting, Dynamic Search & Highlight, Partial MatchVlookup/ Hlookup/ Xlookup – 18 Scenario
2	Offset Function–Basic, Offset with Sum – Horizontal, Offset with Sum – Vertical, Offset with Match, Offset with Average, Offset with Countif Cloud Features – Edit Report, Export to PowerPoint & PDF, Embed Code Generation Setting, Manage Permissions & Content Pack, Mail Subscription, Quick Insights
3	Index & Match Function - Index Function Basic, Index Function with Area Number, Match Function Basic, Index & Match Functions as replacement to Vlookup Function, Index & Match Functions with Drop Down , SUMIF, AVERAGEIF and COUNTIF Application of Excel Functions in Creating HR Dashboards
4	Financial Modelling in Excel: PMT, PPMT, IPMT,IRR, MIRR, XIRR, FV, FVSCEDULE, PV,CUMPRINC Forecasting, Financial Statements Forecasting, Statistical tools-Standard Deviation , Correlation, Regression , histogram, testing-z-test,t-test, chi square
5	Business Analytics, Use of Spread Sheet to anlayze data-Descriptive analytics and Predictive analytics. Macro, Designing Dashboard Power Query Protection New Functions of Excel 2019, VBA

Suggested Readings:

1.**William Fischer ,Excel: Quick Start Guide from Beginner to Expert**

2.Grey Harvey, Excel 2019 All – in- One For Dummies

Advanced Excel

(Course Code: BSGUSE2461)

Year: 2nd

Semester:IIIrd

List of Experiments (Indicative & not limited to)

1. Data Entry and Formatting

- Enter a list of names, addresses, and phone numbers.
- Format cells with different font styles, sizes, and colors.
- Adjust column widths and row heights.

2. Basic Formulas

- Calculate the total and average of a list of numbers.
- Use SUM, AVERAGE, MIN, and MAX functions.

3. Sorting and Filtering

- Sort data by multiple criteria (e.g., by name, then by age).
- Apply filters to display specific records (e.g., only sales over a certain amount).

4. Conditional Formatting

- Highlight cells based on specific conditions (e.g., values greater than a certain number).
- Use color scales to visualize data trends.

5. Using Functions

- Implement logical functions like IF, AND, OR.
- Use text functions like CONCATENATE, LEFT, RIGHT, and MID.

6. Charts and Graphs

- Create various chart types (bar, line, pie) to represent data visually.
- Customize charts with titles, labels, and legends.

7. Pivot Tables

- Create a Pivot Table to summarize sales data by product and region.
- Use slicers to filter data in the Pivot Table.

8. Data Validation

- Set up drop-down lists for data entry.
- Implement rules to restrict the type of data entered (e.g., dates only).

9. VLOOKUP and HLOOKUP

- Use VLOOKUP to find information in a large dataset.
- Implement HLOOKUP for horizontal data retrieval.

10. Descriptive Statistics

- Calculate standard deviation, variance, and correlation using Excel functions.
- Create a summary table with descriptive statistics for a dataset.

12. Macros

- Record a simple macro to automate repetitive tasks (e.g., formatting).
- Edit a recorded macro in the VBA editor.

Fundamentals of Mathematics (Bridge)

(Course Code: BSGUBR2401)

Duration: 30 Hrs

Course Objective: ***To provide a solid foundation in number systems and basic arithmetic operations, enabling students to handle numerical computations and real-life mathematical problems effectively.***

Unit 1

Number Systems and Basic Arithmetic: Types of number systems: natural, whole, integers, rational, real, and complex numbers, Prime numbers, factorization, and divisibility rules, Basic arithmetic operations (addition, subtraction, multiplication, division), Fractions, decimals, and percentages, HCF, LCM, and simple, problem-solving using these concepts.

Unit 2

Algebraic Expressions and Equations: Algebraic expressions: terms, factors, and coefficients, Simplification of expressions, Laws of exponents and radicals, Solving linear equations (one and two variables), Quadratic equations: solving methods (factorization, quadratic formula), Introduction to inequalities and their graphical representation.

Unit 3

Geometry and Mensuration: Basic geometric figures: points, lines, planes, and angles, Properties of triangles, quadrilaterals, and circles, Theorems related to triangles (Pythagoras theorem), parallel lines, and circles, Perimeter and area of 2D shapes, Surface area and volume of 3D shapes (cylinders, cones, spheres, prisms), Introduction to coordinate geometry: distance formula and equation of a line.

Unit 4

Trigonometry Basics: Introduction to angles (degrees and radians), Trigonometric ratios: sine, cosine, tangent, and their reciprocal functions, Trigonometric identities and basic equations, Applications of trigonometry in right-angled triangles, Graphs of sine, cosine, and tangent, functions, Introduction to inverse trigonometric functions

Unit 5

Probability and Statistics: Basic concepts of probability: experiments, events, outcomes, Rules of probability (addition and multiplication rules), Introduction to statistics: data , collection, representation (bar charts, histograms, pie charts),Measures of central tendency: mean, median, mode,Measures of dispersion: range, variance, standard deviation,Basic concepts of probability distributions