GANGA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, KABLANA(JHAJJAR)
An Autonomous Institute(UGC)
Approved by AICTE, New Delhi and Affiliated to MDU, Rohtak
NAAC 'A' GRADE

Scheme of Studies and Examination
Bachelor of Computer Applications

1. DEFINITIONOFCREDIT

1	1Lecture(L)per week	1Credit
2	1Tutorial(T)per week	1Credit
3	1Practical(P)per week	0.5Credit
4	2Practical(Lab)per week	1Credit

2. RANGEOFCREDIT

A range of credits from136 to144 for a student to be eligible to get Under Graduate degree in Computer Application. A student will be eligible to get Under Graduate degree with Honours or Research Program, if he/she completes an additional 48 credits.

STRUCTURE OF UNDER GRADUATE ENGINEERING PROGRAM (BCA)

Sr. No.	Category	Break up of Credits BCA	BCA (Honours)	BCA (With Research)
1	Discipline-Specific Courses(DSC)-Major Course	76*	116*	104 *
2	Minor(MIC)/MIC Vocational(VOC)/Skill Enhancement Courses (SEC)/Internship	37*	45*	45*
3	Multidisciplinary Courses	9*	9*	9*
4	Ability Enhancement Course	8*	8*	8*
5	Value Added Course	6*	6*	6*
6	Research Project/Dissertation			12*
	Total Credits	**136***	**184***	**184***

* Minor variations all owed as per need of the respective disciplines.

* Students exiting the program after second semester and securing48 credits including4 credits of summer internship will be awarded UG Certificate in the relevant Discipline/Subject.Studentsexitingtheprogramafterfourthsemesterandsecuring96creditsincluding4creditsof summer internship will be awarded UG Diploma in the relevant Discipline/Subject. Students will be awarded 3-year UG Degree in relevant major Discipline/Subject upon securing 136 credits.

* Four credits of internship earned by a studentduringsummerinternshipafter2ndsemesteror4thsemesterwillbecountedin5thsemesterofa student who pursue 3 year UG Programs without taking exit option.

3. COURSECODEANDDEFINITIONS

Sr. No.	Category	Course Code
1	Discipline-Specific Courses-Major Course	DSC
2	Minor Vocational	MV
3	Skill Enhancement Courses	SEC
4	Multidisciplinary Courses	MDC
5	Ability Enhancement Courses	AEC
6	Value Added Courses	VAC
7	Internship	INT
8	Research Project	PR
9	Dissertation	DISS

GANGA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, JHAJJAR (HR.), DELHI-NCR

Scheme of Studies and Examination

BCA – 1st Semester

w.e.f. 2024-25

Sr. No.	Category	Course Code	Course Title	Hours per week			Total Load Per Week	Credits	Examination Schedule (Marks)				Exam Duration In Hours
				L	T	P			Assessment	End Semester Exam	Practical	Total	
1	Discipline-Specific Courses-Major Courses	DSC-BCA-101A	Mathematical Foundations of Computer Science	4	0	0	4	4	30	70	-	100	3
2	Discipline-Specific Courses-Major Courses	DSC-BCA-103A	Computer Fundamental and Problem Solving using C	3	0	0	3	3	25	50	-	75	3
		LC-BCA-105A	Computer Fundamental and Problem Solving using C Lab	0	0	2	2	1	10	-	15	25	3
3	Minor Vocational	MV-BCA-107A	PC Software	3	0	0	3	3	25	50	-	75	3
		LC-BCA-109A	PC Software Lab	0	0	2	2	1	10	-	15	25	3
4	Skill Enhancement Courses	SEC-BCA-111A	Internet& Web Design	1	0	0	1	1	-	25	-	25	3
		LC-SEC-113A	Internet & Web Design Lab	0	0	4	4	2	15		35	50	3
5	Multidisciplinary Courses	Refer Table I	----------	3	0	0	3	3	25	50	-	75	3
6	Ability Enhancement Courses	Refer Table II	----------	2	0	0	2	2	15	35	-	50	3
7	Value Added Courses	Refer Table III	----------	2	0	0	2	2	15	35	-	50	3
Total Credits								**22**	**170**	**315**	**65**	**550**	

Scheme of Studies and Examination

BCA – 2nd Semester

w.e.f. 2024-25

Sr. No.	Category	Course Code	Course Title	Hours per week			Total Load Per Week	Credits	Examination Schedule (Marks)				Exam Duration In Hours
				L	T	P			Assessment	End Semester Exam	Practical	Total	
1	Discipline-Specific Courses Major Courses	DSC-BCA-102A	Digital Logic Design	4	0	0	4	4	30	70	-	100	3
2	Discipline-Specific Courses-Major Courses	DSC-BCA-104A	Data and File Structure	3	0	0	3	3	25	50	-	75	3
		LC-BCA-106A	Data and File Structure Lab	0	0	2	2	1	10	-	15	25	3
3	Minor Vocational	MV-BCA-108A	Programming in C & Data Structure	3	0	0	3	3	25	50	-	75	3
		LC-BCA-110A	Programming in C & Data Structure Lab	0	0	2	2	1	10	-	15	25	3
4	Skill Enhancement Courses	SEC-112A	Python Programming	1	0	0	1	1	-	25	-	25	3
		LC-SEC-114A	Python Programming Lab	0	0	4	4	2	15	-	35	50	3
5	Multidisciplinary Courses	Refer Table IV	----------	3	0	0	3	3	25	50	-	75	3
6	Ability Enhancement Courses	Refer Table V	----------	2	0	0	2	2	15	35	-	50	3
7	Value Added Courses	Refer Table VI	----------	2	0	0	2	2	15	35	-	50	3
Total Credits								**22**	**170**	**315**	**65**	**550**	

Note:

1. The duration of all the end-term theory examinations shall be 3 hours.
2. The Criteria for awarding the internal assessment throughout the Programme shall be as under:
   a) Sessional Examination: 20 Marks (66.67%)
   b) Assignments /Presentations /Seminars and Class Participation: 5Marks (16.67%)
   c) Attendance :5 Marks (16.67%

Lessthan65%	:0% of Attendance marks
65%-69.99%	:40% of Attendance marks
70%-74.99%	:60% of Attendance marks
75%-80%	:80% of Attendance marks
Above80%	:100% of Attendance marks

3. The Criteria for awarding the Internal assessment practical course throughout the Programs hall be asunder:
   a) Practical Assignments /Practical File :06Marks (60% Weightage of Assessment)
   b) Attendance (Criteria as mentioned above in2(c)) :04marks (40% Weightage of Assessment)
4. The panel of examiners for end-semester theory examinations shall be prepared and approved by the Department of Computer Science and Application of the internal/external examiners based on their expertise/specialization/area of interest.
5. The panel of examiners based on the examiners' expertise/specialization/area of interest for practicum/viva-voce examination shall be recommended by the Department of Computer Science and Application. In case of unavailability of external examiners due to unavoidable circumstances, the Controller of Examinations may allow the conduct of practical examinations by the internal examiners.
6. The panel of examiners for assessment of the Project Reports/Dissertation/Research Project/Summer Internship Reports shall be recommended by the Department of Computer Science and Application.
7. A student while selecting the minor discipline has to ensure that the courses of the opted minor discipline do not match with the major courses of his/her opted programme.
8. The student may choose the Multidisciplinary Courses from other than the courses offered by their own/respective department.

Semester-I

Table No I (Multidisciplinary Courses)

S.No.	Category	Course Code	Course Title	Offered By
1	Multidisciplinary Courses	MDC-BBA-101A	Foundations of Management	Department of Management(UG)
2		MDC-ASH-103A	Introductory Mathematics	Department of Applied Sciences
3		MDC-CSA-105A	Fundamentals of IT	Department of Computer Application
4		MDC-FTS-107A	Industrial Safety	Department of Fire and Safety

Table No. II (Ability Enhancement Course)

S.No.	Category	Course Code	Course Name
1	Ability Enhancement Courses	AEC-101A	General English-I
2		AEC-103A	French

Table No. III (Value Added Courses)

S.No.	Category	Course Code	Course Title
1	Value Added Courses	VAC-113A	Environment Studies
2		VAC-115A	Health and Wellness

Semester-II

Table No. IV (Multidisciplinary Courses)

S.No.	Category	Course Code	Course Title	Offered By
1	Multidisciplinary Courses	MDC-BBA-102A	Marketing Management	Department of Management(UG)
2		MDC-BBA-104A	Entrepreneurship and MSME	Department of Management(UG)
3		MDC-BCA-106A	Basics of Multimedia	Department of Computer Application
4		MDC-ASH-108A	Introduction to Statistics	Department of Applied Sciences

Table No. V (Ability Enhancement Course)

S.No.	Category	Course Code	Course Name
1	Ability Enhancement Course	AEC-102A	Hindi-I
2		AEC-104A	Sanskrit

TableNo.VI (Value Added Courses)

S.No.	Category	Course Code	Course Title
1	Value Added Course	VAC-114A	Digital and Technological Solutions
2		VAC-116A	Human Values & Ethics

Course Code	**DSC-BCA-101A**				
Category	Discipline-Specific Courses –Major Courses				
Course Title	**Mathematical Foundation of Computer Science**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	4	0	0	**4**	
Course Objectives	The objectives of this course are to • Build a strong mathematical foundation of computer science. • Learn different concepts such as sets, functions, matrices, determinants, limits, differentiation, and statistics for effective problem-solving and analysis.				
Assessment	30 Marks				
End Semester Examination	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall and define fundamental concepts of sets, functions, trigonometry, limits, differentiation, matrices, and determinants.
CO2	Explain and interpret the relationships between mathematical concepts and demonstrate basic understanding of functions and their applications.
CO3	Apply mathematical principles to solve problems involving sets, functions, differentiation, trigonometry, matrices, and determinants.
CO4	Analyze mathematical problems, identify patterns, and break down complex concepts into simpler components using algebraic methods.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 2 marks each from all units and remaining 8 questions of 14 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Sets: Sets, Subsets, Equal Sets Universal Sets, Finite and Infinite Sets, Operation on Sets, Union, Inter-section and Complements of Sets, Cartesian Product, Cardinality of Set, Practical applications of set theory.

Relations And Functions: Relations, Equivalence Relation, Function: Domain and Range, Onto, Into and One to One Functions, Composite and Inverse Functions.

Unit-II

Trigonometry: Introduction, Measurement of angles, trigonometric functions, relation between trigonometric functions, signs of trigonometric functions, trigonometric functions of standard angles. Basic of inverse trigonometry.

Limits & Continuity: Limit at a Point, properties of limit, computation of limits of various types of functions, Continuity of a function at a point, Continuity over an interval.

Unit-III

Differentiation: Derivative of a function, Derivatives of sum, differences, product & quotient of functions, Derivatives of polynomial, trigonometric, exponential, logarithmic, inverse trigonometric and implicit functions, Logarithmic Differentiation, Chain rule and differentiation by substitution.

Unit-IV

Matrices: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and Multiplication of Matrices. Ad joint of matrix, Inverse of matrix, solving a system of linear equations using matrix method.
Determinants: Definition, Minors, Cofactors, Properties of Determinants, Applications of determinants in finding area of triangle.

Suggested Readings:

- Business Statistics Gupta by S.P. & M.P. Gupta,
- An Introduction to Statistical Methods by Gupta, C.B.,
- A Text Book of Business Mathematics Reddy by R. Jaya Prakash, Y. Mallikarjuna Reddy, Ashish Publishing House, New Delhi.
- Business Mathematics by Janardan Dinodia and Dr. Dalip Kumar, Jeevansons Publications NewDelhi.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Set Theory	https://youtube.com/playlist?list=PLEHGYFbPuuMEMCD8hwgnsZS0xKd8ydie&si=wr6io6TNmtN9CNsa
Unit-II	Trigonometry	https://www.youtube.com/watch?v=F2NqTIej98Q
	Limits & Continuity	https://www.youtube.com/watch?v=tffrrtzUhmw&list=PL7oBzLzHZ1wXBSiJEgqz_iwVoLiY8qhbv
Unit-III	Differentiation	https://www.youtube.com/watch?v=N2PpRnFqnqY
Unit-IV	Matrices	https://www.youtube.com/watch?v=T7I_C_lL75I
	Determinants	https://www.youtube.com/watch?v=7SQbz96xUyg

Course Code	**DSC-BCA-103A**				
Category	Discipline-Specific Courses –Major Courses				
Course Title	**Computer Fundamental and Problem-Solving Using C**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	3	0	0	**3**	
Course Objectives	The objectives of this course are to • Develop problem-solving skills by applying logical thinking to write efficient C programs. • Study about how to work with files for input/output operations in C.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall key concepts related to computer fundamentals, programming techniques, data structures, and system components.
CO2	Explain the functioning of computer systems, programming concepts, decision-making structures, and basic data handling techniques in C.
CO3	Apply programming skills in C to solve computational problems, manipulate data structures, and implement algorithms effectively.
CO4	Analyze complex programming problems, identify appropriate solutions, and break down problems into sub-tasks using logical structures and functions.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Computer Fundamentals: Generations of Computers, Block Diagram along with its components, classification of computers, Applications of computers in various fields. Input/Output Devices, Memory: Concept of primary & secondary memory, Cache Memory, Secondary storage devices.

Overview of Networking & Operating System: Introduction to computer networking, Network types, Network topologies, Internet and its applications; Operating system and its functions.

Unit-II

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Techniques of Problem Solving, Documentation, Algorithms, flow chart, decision tables, pseudo code.

Overview of C: History of C, Importance of C, Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant, Structure of a C Program, printf(), scanf() Functions, Operators & Expression, type casting and conversion, operator hierarchy & associativity.

Unit-III

Decision making & Branching: Decision making with IF statement, IF-ELSE statement, Nested IFstatement, ELSE-IF ladder, switch statement, go to statement.
Decision making & Looping: while, do-while and for loop, jumps in loops, break, continue statement, Nested loops
Functions: Standard Mathematical functions, Input/output: Unformatted & formatted I/O function in C,Input functions output functions, string manipulation functions User defined functions, Introduction/Definition, function prototype, Local and global variables, passing parameters, recursion.

Unit-IV

Arrays & Pointers: Definition, types, initialization, processing an array, passing arrays to functions, Declaration and initialization of string, Input/output of string data, Introduction to pointers.
Structure & Union: Structure definition, Declaration, structure Assignments, Arrays in structure, Structure Arrays, Pointer Structure, Nested Structure, Arrays and Arrays of Structure, Union and File Handling.

Suggested Readings:

- Programming with C by Gottfried, Byron S.,Tata McGraw Hill.
- Computing Fundamentals and Programming in C by Gill Nasib Singh, Khanna Books Publishing Co. New Delhi.
- Programming in ANSI C by Balagurusamy, E., 4E, Tata McGraw-Hill.
- Problem Solving and Program Design in C by Jeri R. Hanly & Elliot P. Koffman, Addison Wesley.
- Let us C by Yashwant Kanetker, BPB.
- Computer Programming in C by Rajaraman, V., PHI.
- Working with C by Yashwant Kanetker, BPB.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Generations of Computers	https://archive.nptel.ac.in/courses/106/105/106105163/
	Introduction to computer networking	https://archive.nptel.ac.in/courses/106/105/106105183/
	Introduction to operating system	https://archive.nptel.ac.in/courses/106/105/106105214/
Unit-II	Algorithm & Flow Chart	https://www.youtube.com/watch?v=5AHRXOtn9bY
	Introduction To C Programming	https://www.youtube.com/watch?v=IoT0zP4YlMk
Unit-III	Conditional Control Statements & Loops	https://www.youtube.com/watch?v=HyDpW7Al6_E
	Functions	https://www.youtube.com/watch?v=CUBwN0rHxvg
	Call By value & Call By reference	https://www.youtube.com/watch?v=1iwmwEJhcMw
Unit-IV	Introduction to Array	https://www.youtube.com/watch?v=I9828WOCEMg
	String	https://www.youtube.com/watch?v=rcGeNl95Gv4
	Structures	https://www.youtube.com/watch?v=kDDd7AmXq1w

Course Code	**LC-BCA-105A**				
Category	Discipline-Specific Courses –Major Courses				
Course Title	**Computer Fundamental and Problem Solving Using C Lab**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	0	0	2	**1**	
Course Objectives	The objectives of this course are to • Equip students with the ability to write correct and well-structured C programs. • Enhance student's logical thinking and problem-solving abilities.				
Assessment	10 Marks				
End Semester Examination	15 Marks				
Total	25 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Write and execute C programs to perform operations like sum, finding largest number, swapping values, and using recursion and iteration.
CO2	Analyze and debug C programs to identify logical errors, optimize code, and ensure correctness in solving problems like Fibonacci series and arrays.
CO3	Evaluate the efficiency and correctness of functions, mathematical operations, string manipulations, and memory management techniques in C.
CO4	Design and develop complex C programs using arrays, functions, pointers, structures, and file handling techniques to solve real-world problems.

Exp. No.	Contents
1.	Introduction to the programming environment (Turbo C IDE).
2.	Write a C program to calculate the sum of two numbers.
3.	Write a C program to find the largest of three numbers using if-else statements
4.	Write a program to swap the values of two given variables.
5.	Apply the concepts of recursive functions to solve problems like factorial, Fibonacci series.
6.	Apply the concepts of Iteration to solve problems e.g., sum of series.
7.	Apply the concepts of arrays for 1D & 2D Array manipulation
8.	Apply various string manipulation functions.
9.	Apply the concepts of functions, call by value & call by reference.
10.	Apply various mathematical functions like abs(), pow(), sqrt() floor(), etc.
11.	Apply the concepts of pointers, structures and dynamic memory allocation.
12.	Analyze the concept of file handling techniques and their operations

Useful Video links:

Experiment no.	Experiment name	Links
1	Calculate the sum of two numbers.	https://www.youtube.com/watch?v=s4EiG4RXwyU
2	Find the largest of three numbers using if-else statements.	https://www.youtube.com/watch?v=HyDpW7Al6_E
3	Recursive functions to solve problems like factorial, Fibonacci series.	https://www.youtube.com/watch?v=LoIe_9cTtPE
4	Arrays for 1D & 2D Array manipulation.	https://www.youtube.com/watch?v=I9828WOCEMg
5	Pointers, structures and dynamic memory allocation.	https://www.youtube.com/watch?v=Z_0xXmOgYtY

Course Code	**MV-BCA-107A**				
Category	Minor Vocational				
Course Title	**PC Software**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	3	0	0	**3**	
Course Objectives	The objectives of this course are to • Develop a foundational understanding of MS-Windows operating system interface. • Enable students to proficiently use key office applications, including word processors, spreadsheets, and presentation software.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Recall basic concepts of MS-Windows, word processing, spreadsheet, and presentation software functionalities and tools.
CO2	Explain the essential functions of MS-Windows, word processing, spreadsheet, and presentation software, including their practical applications.
CO3	Apply their skills in MS-Windows, word processing, Excel, and PowerPoint to create and manage documents, presentations, and spreadsheets.
CO4	Analyze and organize data, documents, and presentations, determining effective layouts, formatting, and data analysis methods.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

MS-Windows: Operating System-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screensaver and appearance. Using windows accessories.

Unit-II

Documentation Using word processing software: Introduction to word processing, Toolbars, Creating & Editing Document, Formatting Document and printing document, Finding and replacing text, Format painter, Header and footer, Spelling and Grammar Tool, Page Formatting, Bookmark, Mail Merge, Macros, Tables and File Management, Clipart, Templates, Tracking changes.

Unit-III

Slide based Presentation: Starting MS–Power Point, working with power point, Creating, Saving and Printing a presentation, working with Animation, adding a slide to presentation, navigating through a presentation, Slide-sorter, Slide-show, editing slides, Working with Graphics and Multimedia in PowerPoint (Inserting Photo, Video & Sound).

Unit-IV

Electronic Spreadsheet using Excel Workbook: Introduction to MS-Excel, Feature of MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Cell referencing, Pivot table & Pivot Chart, Linking, Sorting, Filtering.

Suggested Readings:

- Learn Microsoft Office by Russell A. Stultz – BPB Publication
- Microsoft Office 2000 by Courter, G Marquis (1999), Professional Edition. BPB.
- Microsoft Office XP Fast and Easy by Koers, D (2001), PHI.
- Office XP: The Complete Reference by Nelson, S L and Kelly, J (2002), Tata McGraw-Hill.
- Microsoft Office Complete Reference – BPB Publication.

Course Code	**LC-BCA-109A**				
Category	Minor Vocational				
Course Title	**PC Software Lab**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	0	0	2	**1**	
Course Objectives	The objectives of this course are to • Equip students with hands-on experience in using various PC software applications, including word processors, spreadsheets, presentation tools. • Enable students to create, format, and edit various types of documents, applying advanced features and tools for professional presentation.				
Assessment	10 Marks				
End Semester Examination	15 Marks				
Total	25 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Apply office automation tools like MS-Word, Excel, and PowerPoint to create, format, and manage documents, spreadsheets, and presentations.
CO2	Analyze data, charts, and formulas in MS-Excel, identifying patterns and drawing conclusions to support decision-making.
CO3	Evaluate the effectiveness of document formatting, Excel formulas, and presentation designs, ensuring accuracy, clarity, and professional standards.
CO4	Design and create professional documents, presentations, and reports by integrating advanced features like macros, charts, and mail merge.

Exp. No.	Contents
1.	To study about various concepts of office automation Tools.
2.	Use the concept of find and replace text in MS-Word.
3.	Use the features of Format Painter, Header and Footer, Drop Cap, AutoText, and Autocorrect in MS-Word.
4.	Analyze the marks of the students of a class using various chart (Line, XY, Bar and Pie) with the help of MS-Excel.
5.	Evaluate the accuracy of Microsoft Excel formulas(SUM, AVERAGE, etc.) andconditional formatting.
6.	Create a professional resume using Microsoft Word, including headers, footers, andbullet points.
7.	Create a document in MS-Word with macros to automate repetitive tasks. Explain how to recor and execute macros.
8.	Create personalized letter with the help of mail merge features.
9.	Design a worksheet in MS-Excel with a header and footer.
10.	Create a Microsoft PowerPoint presentation with various slide layouts, images, and charts.
11.	Implement slide transitions and animations in MS-PowerPoint.
12.	Design a presentation in MS-PowerPoint with Excel charts and WordArt.

Course Code	**SEC-BCA-111A**				
Category	Skill Enhancement Courses				
Course Title	**Internet & Web Design**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	1	0	0	**1**	
Course Objectives	The objectives of this course are to • Guide students in designing visually appealing and functionalwebsites using HTML. • Enable students to apply CSS techniques for improving userexperience and web accessibility.				
Assessment					
End Semester Examination	25 Marks				
Total	25 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall key concepts related to the Internet, web browsers, HTML, CSS, web publishing, and web page elements.
CO2	Explain the principles of web development, including HTML, CSS, web page structures, and the role of different web technologies.
CO3	Apply web development techniques to create and design basic websites using HTML and CSS, integrating text, graphics, and forms.
CO4	Analyze web design problems, evaluate design options, and implement effective solutions for layout, content, and user interaction.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 1 mark each from all units and remaining 8 questions of 5 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction to Internet and World Wide Web: A brief Introduction to the Internet, Evolution of World Wide Web; Basic features; Web Browsers; Web Servers; Hypertext Transfer Protocol, URLs; Searching and Web-Casting Techniques; Search Engines and Search Tools, Domain Name System, Home Page, Web page and website.

Unit-II

Web Publishing: Hosting your Site; Internet Service Provider, Phases of Planning and designing your Web Site, steps for developing your Site, Choosing the contents

Web Development: Introduction to HTML, Hypertext and HTML; HTML Document Features; HTML command Tags; Headers; Text styles; Text Structuring; Text colors and Background; Formatting text.

Unit-III

List: Ordered and Unordered lists, Table Creation and Layouts. Images; Inserting Graphics; Frame Creation and Layouts; Creating Links; Working with Forms and Menus; Working with Radio Buttons and Check Boxes; Text Boxes; Page layouts.

Unit-IV

Cascading Style Sheets (CSS): Basic Concepts, Properties, Creation of Style Sheets. Common Tasks with CSS: Text, Fonts, Margins, Links, Tables, Colors. Marquee. Mouse Overs. Filters and Transitions. Adding Links. Adding Tables. Adding Forms. Adding Image and Sound. Use of CSS in HTML Documents, Linking and Embedding of CSS in HTML.

Suggested Readings:

- Fundamentals of the Internet and the World Wide Web by Raymond Greenlaw and Ellen Hepp – 2001, TMH.
- Internet & World Wide Programming by Deitel & Nieto, 2000, Pearson Education.
- Web Technologies by Uttam K. Roy, Oxford University Press.
- HTML Black Book by Stephen Holzner, Wiley Dreamtech.
- Web Technology by Rajkamal, Tata McGraw-Hill.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction To Internet	https://www.youtube.com/watch?v=YOXwcbwSEUo
	Internet and www	https://www.youtube.com/watch?v=-2hpoIjNSb4
Unit-II	Web Development	https://www.youtube.com/watch?v=QEtWL4lWlL4
Unit-III	List and table creation	https://www.youtube.com/watch?v=omuyzDmNaf4
Unit-IV	Cascading style sheets	https://www.youtube.com/watch?v=h_RftxdJTzs

Course Code	**LC-SEC-113A**				
Category	Skill Enhancement Courses				
Course Title	**Internet & Web Design Lab**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	0	0	4	**2**	
Course Objectives	The objectives of this course are to • Create structured and well-formatted web pages using HTML, incorporating various elements such as text, images, links, lists, tables, and forms. • Use CSS to make web pages look attractive by adding colors, fonts, and layouts.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total	50 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Write and implement HTML programs to create headings, insert images, format text, change background, and design forms.
CO2	Analyze the application of different style sheets (inline, internal, external) in web pages and evaluate their impact on design.
CO3	Evaluate the usability and effectiveness of HTML forms for user interaction and assess their integration into web pages.
CO4	Design and develop multi-page websites using HTML, incorporating tables, lists, forms, framesets, and linked pages for user navigation.

Exp. No.	Contents
1.	To study the basic Structure of HTML.
2.	Write a program to use Heading Element in HTML.
3.	Write a program to insert image in HTML.
4.	Write a program to use Formatting text in HTML.
5.	Write a program for changing Background and Style.
6.	Analyze the use of various types of style sheets in a web page (inline, internal andexternal style sheets).
7.	Evaluate the usability of the form for user interaction.
8.	Write a program to Create a Table in HTML.
9.	Write a program to Create list in HTML.
10.	How to implement Frameset in HTML.
11.	Write a program to Design a student registration and Log-in form.
12.	Create a simple multi-page website with linked HTML pages.

Useful Video links:

Experiment no.	Experiment name	Links
1	Basic Structure of HTML.	https://www.youtube.com/watch?v=QEtWL4lWlL4
2	Program to use Heading Element in HTML.	https://www.youtube.com/watch?v=omuyzDmNaf4
3	Program to insert image in HTML.	https://www.youtube.com/watch?v=zGedWVlx6hQ
4	Program to Create a Form in HTML.	https://www.youtube.com/watch?v=TeV2eDHtVa0
5	Program to Create a Table in HTML.	https://www.youtube.com/watch?v=WRdTXaz4_Ls

Course Code	**MDC-BBA-101A**				
Category	Multidisciplinary Courses				
Course Title	**Foundations of Management**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	3	0	0	**3**	
Course Objectives	The objectives of this course are to • Help the students develop fundamental and transferable skills in order to become effective managers. • The students will understand how planning, organizing, and controlling have impacts on a manager's effectiveness and efficiency.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall key concepts of management, including managerial levels, functions, planning, organizing, controlling, and decision-making processes.
CO2	Explain the nature and purpose of management, various planning and decision-making processes, and the significance of control techniques in organizations.
CO3	Apply management principles to real-world scenarios, demonstrating effective decision-making, organizational structuring, and control techniques in different business contexts.
CO4	Analyze management problems, assess organizational structures, and evaluate strategies and control systems to improve business performance.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Overview of Management: Concept, Nature, Process, Managerial levels (Technical, Conceptual, Interpersonal), Skills, Functions and Role of managers, Challenges of Management.

Unit-II

Planning: Nature and purpose of planning, Planning process, Types of plans, Management by Objectives (MBO), Strategies, types of strategies (Corporate Strategy, Business Strategy, Differentiation Strategy, Retrenchment Strategy, Growth Strategy), Decision making: Types of decision, Decision making process, Rational decision making.

Unit-III

Organizing: Meaning, Nature and purpose of organizing, organization structure, Departmentation, Span of control, Centralization and Decentralization, Delegation of authority and responsibility.

Unit-IV

Controlling: Meaning, Nature and scope of control, Types of control, Control process, Control techniques (Budgetary Control, Financial Control, Quality Control, Inventory Control, Statistical Control, Production Control), Cost Control, Effective control system.

Suggested Readings:

- Management Theory and Practice by C. B. Gupta, Sultan Chand and Sons
- Essentials of Management by Koontz and Wechrich, Tata McGraw-Hill
- Management: Concepts and Strategies by J. S. Chandan, Vikas Publishing House, New Delhi
- Management by Robbins and Coulter, Prentice Hall of India, New Delhi
- Developing Communication Skills by Krishna Mohan and Meera Banerji, Macmillan India Ltd., New Delhi
- Management and Organizational Behavior by Wendy Blaoisi, Curtis W. Cook, and Phillip L. Hunsaker, McGraw Hill

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction to Management	https://youtu.be/TtbImDfUt4c?feature=shared
Unit-II	Decision Making	https://youtu.be/B96-Gpn56sU?feature=shared
Unit-III	Delegation Of Authority	https://youtu.be/GlLXV7JLVnk?feature=shared
Unit-IV	Controlling: Issues, Types, Techniques and Importance	https://youtu.be/v7XmhnenEGs?feature=shared

Course Code	**MDC-ASH-103A**				
Category	Multidisciplinary Courses				
Course Title	**Introductory Mathematics**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	3	0	0	**3**	
Course Objectives	The objectives of this course are to • Understand and apply set theory, matrix algebra, determinants, sequences, series, permutations, combinations, and the binomial theorem • To solve practical problems, interpret results, and evaluate their real-world applications and implications.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Describe the fundamental concepts of set theory, indices & apply them to solve practical problems.
CO2	Classify various types of matrices and perform the different operations and solve equations using matrices.
CO3	Solve system of linear equations using the concepts of determinants including minors, co-factors & properties of determinants.
CO4	Understand the basics of sequences, series and progression to apply them for solving related numerical problems.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Theory of Sets: Meaning and types of sets, Representation of sets, Venn diagram, Operation on sets, Union, intersection and complements of sets, Cardinality of finite set, Practical applications of set theory, Ordered pairs, Cartesian product of two sets. **Indices:** Introduction, Law of indices.

Unit-II

Algebra of Matrices: Definition, Types of matrices, Addition, Subtraction, Scalar multiplication, Multiplication of matrices and its properties.

Determinants: Introduction, Minors, Co-factors, Properties of determinants, Applications of determinants in finding solution of linear equations.

Matrices (Continued): Transpose of matrix, Symmetric and skew-symmetric matrices, Singular and non-singular matrices, Ad joint of matrix, Inverse of matrix, Solution of system of linear and homogeneous linear equations by using matrix method.

Unit-III

Sequence and Series: Sequence, Series and progression, Arithmetical progression and its representation, Sum of n terms of an A.P, Arithmetic mean, Geometrical progression and sum of G.P, Geometric mean, Application of A.P and G.P, Some special sequences.

Unit-IV

Permutation and Combination: Factorial notation, Permutation, Circular permutation, Combination, Practical problem on combinations.
Binomial Theorem: Introduction, General term, Middle term, Absolute term, Coefficient of any power of x.

Suggested Readings:

- Business Mathematics by Sancheti, D.C., A.M. Malhotra, V.K. Kapoor, Sultan Chand & Sons
- Business Mathematics by Zameerudin, Qazi, S.K. Bhambri, Vikas Publishing House Pvt. Ltd
- Text Book of Business Mathematics by R. Jaya Prakash, Ashish Publishing House
- Business Mathematics by Janardan Dinodia, Dr. Dalip Kumar, Jeevan sons Publications

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction to set theory	https://youtube.com/playlist?list=PLEHGYFbPuuMEMCD-8hwgnsZS0xKd8ydie&si=wr6io6TNmtN9CNsa
Unit-II	Arithmetic Progression	https://youtube.com/playlist?list=PLaAhQ2ofZZRD6WKjeCFg890_07QXWNT6i&si=udeAM9Kq_4CZwK_K
Unit-III	Permutation and Combination	https://youtu.be/iyIq1YSSA5E?si=Qukhh4uhRDgADByC
Unit-IV	Sequence and Series	https://youtube.com/playlist?list=PLVFqK_9GOGXm-Ia53f-yONR8XhwGknj9Z&si=YXFrCI3YdJnjYAez

Course Code	**MDC-CSA-105A**				
Category	Multidisciplinary Courses				
Course Title	**Fundamentals of IT**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	3	0	0	**3**	
Course Objectives	The objectives of this course are • To develop fundamental skills in using IT tools and applications for everyday tasks and problem-solving. • To explore basic networking concepts and understand how data is transmitted across networks and the internet.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall key concepts related to the evolution of computers, types of storage, input/output devices, operating systems, and basic internet terminology.
CO2	Explain the functions of various computer components, data storage methods, operating systems, and the principles of data communication and internet usage.
CO3	Apply their knowledge of computer systems to organize and retrieve data, use input/output devices effectively, and operate web-based applications.
CO4	Analyze data transmission methods, evaluate the types of storage and communication systems, and assess how operating systems manage resources and user interfaces.

Note: Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction: Evolution of computers, Classification of computers, Block Diagram along its components and characteristics, Usefulness of computers, Human being Vs. Computer, Applications of computers in various fields, I/O devices, Role of I/O devices in a computer system, Input Units, Keyboard, Pointing devices, Scanners and its types, Voice recognition systems, Vision input system, Touch screen, Output units, Monitors and its types, Printers & its types, Plotters and types of plotters, Sound cards, Speakers.

Unit-II

Storage Fundamentals: Primary Vs Secondary storage, Data storage and retrieval methods, Primary Storage, RAM, ROM, PROM, EPROM, EEPROM, Secondary storage, Magnetic tapes, Magnetic disks, Cartridge tape, Hard disks, Floppy disks, Optical disks, Compact disks, Zip drive, Flash drives.
Business Data Processing: Introduction, Data storage hierarchy, Method of organizing data, File types, File organization, File utilities, Data representation and its conversion.

Unit-III

Operating Systems: Operating system basics, Purpose of the operating system, Types of an operating system, providing user interface, Running programs, Sharing information, Managing hardware enhancing with utility software.
Data Communication: Communication process, Data transmission speed, Communication types (modes), Data transmission medias, Modem and its working, Characteristics, Types of networks, Network topology, Computer protocols.

Unit-IV

Internet: Basic interne terms, Web Page, Website, Homepage, Browser, URL, Hypertext, ISP, Web Server, HTML, DHTML, XML, Search engine application of internet, Introduction to client side and server side scripting.
Electronic Mail: Introduction, Advantages and disadvantages, User Ids, Passwords, e-mail addresses, Message components, Message composition, Web Browsers and search engines.

Suggested Readings:

- Computers Today by Donald Sanders, McGraw-Hill Publishers.
- Introduction to Computers by Davis, McGraw-Hill Publishers.
- Fundamentals of Computers by V. Rajaraman, Prentice-Hall India Ltd., New Delhi.
- Computer Fundamentals by A. Goel, Pearson Education.
- Fundamentals of Computers by Reema Thareja, Oxford.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction to Computer	https://www.youtube.com/watch?v=LJ5c3AycRIE
Unit-II	Memory	https://www.youtube.com/watch?v=tas2eUavhRE
Unit-III	Operating System	https://www.youtube.com/watch?v=jciGIvn7UfM&list=PL3-wYxbt4yCjpcfUDz-TgD_ainZ2K3MUZ
Unit-IV	Internet	https://youtu.be/YOXwcbwSEUo?si=tzxN6w6N37mdTHF3

Course Code	**MDC-FTS-107A**				
Category	Multidisciplinary Courses				
Course Title	**Industrial Safety**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	3	0	0	**3**	
Course Objectives	The objectives of this course are • To familiarize with the safety methodology, education and training for an organization and environment. • To know the different types of accident and its preventive methods. • To study the rules of safety and safety management system.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	**Skills Demonstrated**
CO1	Recall key concepts related to safety, accident prevention, safety rules, safety organization, and safety audits in industrial settings.
CO2	Explain the importance of safety integration, the principles of accident prevention, types of safety audits, and the role of safety committees.
CO3	Apply safety protocols, accident investigation processes, and safety management systems to real-world industrial scenarios to ensure a safe working environment.
CO4	Analyze accident reports, safety audits, and training programs to identify potential hazards, areas for improvement, and effective safety practices.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Safety: Introduction to Safety, Need for Integration of Health and Environment Safety, Safety and Productivity, Fundamental of Safety, Important Points for Consideration of Safety, General Instructions for Safety, Safety in Design and Operations, Inherent and Engineered Safety.

Unit-II

Safety Organization: Objectives, Types and Functions, Safety Committee, Need, Types, Advantages.
Accident: Introduction, Types of Accidents, Causes of Accidents, Principle of Accident Prevention, Accident Investigation, Process of Investigation, Reporting, Cost of Accident.

Unit-III

Safety Education and Training: Introduction, Importance, various Training Methods, Effectiveness of Training, Behavior Oriented Training, Communication, Purpose, Barrier to Communication, Domestic Safety and Training.

Unit-IV

Safety Rules: Safety Rules for Industries, Safety Culture, Safety Policy, Safety Management System, Safety Reporting.
Safety Audits: Introduction, Types of Audit, Audit Methodology, Non-Conformity Report, Audit Checklist and Report,

Suggested Readings:

- Fundamentals of Industrial Safety & Health by K.U.Mistry, SiddharthPrakashan.
- Safety Management by R.K. Mishra, AITBS Publishers.
- Safety Management in Industry by N.V. Krishnan, Jaico Publishing House, 1997.
- Industrial Safety by Ronald P. Blake, Prentice Hall, New Delhi, 1973.
- Occupational Safety and health by David L. Goetsch, Prentice Hall
- Modern Accident Investigation and Analysis by Ted S. Ferry, John Wiley & Sons
- Fire Safety in Buildings by V K Jain, New Age publishers, New Delhi
- Fundamentals of Fire Safety in Building Design by Dr. Than Singh Sharma, Aayush Publications, N. Delhi

Useful Video links:

Unit No.	Topics	Links
Unit-I	Safety	https://www.youtube.com/watch?v=v-eltsixu4I https://www.youtube.com/watch?v=MQ3xuV98wwM
Unit-II	Accident Investigation	https://youtu.be/VhuZ6M7a8N8
Unit-III	Safety Performance	https://www.youtube.com/watch?v=pwkjK0Zqa3w

Course Code	**AEC-101A**				
Category	Ability Enhancement Courses				
Course Title	**General English-I**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	2	0	0	**2**	
Course Objectives	The objective of this course is to • Develop proficiency in English grammar, communication fundamentals, LSRW skills, and technical writing for effective and professional written and verbal interactions.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total	50 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall key concepts related to English grammar, communication, LSRW skills, and technical writing.
CO2	Demonstrate an understanding of communication processes, grammar rules, and effective writing techniques for various contexts.
CO3	Apply English grammar rules, communication skills, and technical writing formats to real-world scenarios and practical exercises.
CO4	Analyze communication barriers and effective strategies, along with evaluating different types of writing formats and their effectiveness.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 marks each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Basics of English Grammar: Parts of speech, Conjunction, Prepositions, Articles, Subject-verb agreement and Noun-pronoun agreement, Determiners.

Unit-II

Basics of Communication: Definition, Nature, Importance of communication, Communication process, Barriers to effective communication and overcoming strategies, Types of communication, Communication networks.

Unit-III

Enhancing LSRW Skills: Listening skills, Cognitive process of listening, Types of listening, Active listening techniques, Barriers to effective listening, Speaking skills, Public speaking, Voice modulation, Reading skills.

Unit-IV

Technical Writing: Notices, Memo, Circulars, Structure and layout of business letters, Structure, layout and types of letters.

Suggested Readings:

- Business Communication Process and Product by Mary Ellen Guffey and Dana Loewy, Cengage Learning.
- Effective Communication Skill by John Nielsen, NTC/Contemporary Publishing Company

- Public Speaking for Success by Dale Carnegie, Per Capita Publishing
- Word Power Made Easy by Norman Lewis, Goyal Publishers & Distributors Pvt Ltd.
- English Grammar in Use by Raymond Murphy, Cambridge University Press

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Definitions and concepts	https://drive.google.com/file/d/13pBi2pR451YrMPrahAzTN2aXnG4W3yt/view?usp=drive_link
	Introduction	https://drive.google.com/file/d/12oHQHoXb3vXjOXyNp_Z0tj8Ues5qz2gk/view?usp=drive_link
Unit-II	Non Verbal Communication	https://drive.google.com/file/d/132F5pw8s4mz-ImMPmCCvW97gfG6gZF3q/view?usp=drive_linkhttps://drive.google.com/file/d/13fVlQJccvxZeE0WfdYa6Yu0CQskkQTK/view?usp=drive_link
	Written communication in international business	https://drive.google.com/file/d/13Z0aC56H_xNsnPH3K5NI2qRDyIwJqxlj/viewusp=drive_link
	Barriers to communication	https://drive.google.com/file/d/13b4B4mLWvd6c25uHTSLSA4ALo_npSvJM/viewusp=drive_link
Unit-III	Business letters writing	https://drive.google.com/file/d/13WXoM4FWL7O1BfKOMO8X3OMGNSU64929/view?usp=drive_link
Unit-IV	Written communication in international business	https://drive.google.com/file/d/13Z0aC56H_xNsnPH3K5NI2qRDyIwJqxlj/view?usp=drive_link

Course Code	**AEC-103A**				
Category	Ability Enhancement Course				
Course Title	**French Language**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	2	0	0	**2**	
Course Objectives	The objectives of this course are • To develop foundational language skills necessary for basic communication, including introducing themselves and others, describing places, and talking about their surroundings. • To focus on enhancing students' ability to express personal likes, interests, and other simple ideas, ensuring their ability to engage in basic communicative transactions. • To achieve a partial A1 level by the end of the semester according to the Common European Framework, which will enable them to handle simple communication in everyday situations.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total	50 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	**Skills Demonstrated**
CO1	Recall key vocabulary, phrases, and basic grammar structures related to their environment for simple communication tasks.
CO2	Understand simple spoken and written texts related to everyday topics, demonstrating comprehension through answering questions and following instructions.
CO3	Apply basic language skills to complete writing tasks, participate in conversations, and engage in everyday activities like shopping.
CO4	Analyze short conversations, identifying key information, and differentiate between formal and informal communication in familiar settings**.**

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 marks each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Reading: Reading Simple Texts Related to One's Immediate Environment such as Notices, Posters, Catalogs, Fliers, Personal Messages or Emails and Answering Questions on them.

Unit-II

Listening: Understanding familiar Words and very Basic Phrases about Oneself, One's Family, and Immediate Concrete Surroundings, such as Very Brief Announcements in Public Spaces, Short, Simple Formal/Informal Conversation, Questions and Instructions. When Speakers are Speaking at a Slower Pace.

Unit-III

Writing: Guided Writing will Include activities such as, Filling a Form, Writing Simple Phrases (Postcards, Messages, Invitations etc) on everyday Topics.

Unit-IV

Speaking:Monologue: Describing and Presenting oneself, One's Immediate Environment and the People S/He Knows Using Simple Phrases and Sentences.
Dialogue: Taking part in a Conversation and Interaction in a Simple way provided the other Person is Prepared to Repeat or to Rephrase more Slowly and help Formulate what s/he is trying to say asking simple Questions on familiar Topics or Matters related to one's Immediate Environment. Making simple Purchases in Shops or Obtaining Services that one Requires.

Suggested Readings:

- Kizirian, V. M, Daill, E., Berthet, A., Hugot, C., Waendendries, M. Alter Ego + 1. Paris : Hachette.
- Berthet, A., Daill, E., Hugot, C., Waendendries, M. Alter Ego+ 1 ,Cahier d'activités. Paris : Hachette.
- Hachette, Y., Mérieux, R. Latitudes 1, (Livre de l'élève & Cahier d'exercices). Paris : Didier.
- Cocton, M-N., Dupleix, D., Heu, E., Kasazian, E., Ripaud, D.Saison 1, (Livre de l'élève & Cahier d'exercices). Paris : Didier.
- Denyer, M., Garmendia, A., Lions-Olivieri, M-L. Version Originale 1, Livre de l'élève. Paris : Editions Maisons des Langues.
- Magne, M., Lions-Olivieri, M-L. Version Originale 1, Cahier d'exercices. Paris : Editions Maisons des Langues.

Useful Video Links:

Unit No	Topics	Links
Unit-I	French Absolute Beginners Guide	https://www.youtube.com/watch?v=Sk6YQynZ1h8
	Learn how to read in French	https://www.youtube.com/watch?v=sSCEoAWw0q4
Unit-II	French Listening Practice - 50 Everyday French Sentences	https://www.youtube.com/watch?v=Aofb0XEJIks
Unit-III	Learn how to write French with me	https://www.youtube.com/watch?v=9iUiei9YMCk
Unit-IV	Slow and Easy French Conversation Practice	https://www.youtube.com/watch?v=ReVCwcHwnZI

Course Code	**VAC-113A**				
Category	Value Added Courses				
Course Title	**Environment Studies**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	2	0	0	**2**	
Course Objectives	The objective of this course is to • Create a pro-environment attitude and a behavioral pattern in student community and society that attaches importance and priority to create sustainable lifestyle and awareness on various environmental issues.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total	50 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall the fundamental concepts of environmental studies, ecosystems, natural resources, biodiversity, pollution, and disaster management.
CO2	Explain the scope, importance, and multidisciplinary nature of environmental studies, including sustainability, resource conservation, and environmental issues.
CO3	Apply knowledge of natural resources, ecosystems, and biodiversity conservation techniques to address real-world environmental problems and promote sustainable practices.
CO4	Analyze environmental issues such as pollution, resource depletion, and biodiversity loss, and assess their causes, effects, and solutions.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 marks each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction to Environmental Studies: Multidisciplinary nature of environmental studies, Scope and importance, Concept of sustainability and sustainable development, Ecosystem, Introduction, Characteristic and features, Structure and function of the following ecosystem- Forest ecosystem, Aquatic ecosystems (ponds, lakes, rivers, oceans).

Unit-II

Renewable and Non-renewable resources: Natural resources and associated problems, Forest resources – (Use and over-exploitation, deforestation, timber extraction, mining, dams and their effects on forest and tribal people), Water resources – (Use and over-utilization of surface and ground water, Floods, Drought, Conflicts over water, dams benefits and problems), Land resources – (Land as a resource, Land degradation, Role of an individual in conservation of natural resources).

Unit-III

Biodiversity and its Conservation: Introduction, Genetic, Species and ecosystem diversity, biogeographically classification of India, Value of biodiversity, Consumptive use, Productive use, Social use, Ethical use, Threats to biodiversity, Habitat loss, Poaching of wildlife, Man wildlife conflicts.

Conservation of biodiversity: Benefits and name of the methods of In-situ and Ex-situ conservation of biodiversity.

Unit-IV

Environmental Pollution: Definition, Causes, Effects and control measures of (Air pollution and Water pollution), Role of an individual in prevention of pollution, Disaster management Meaning, Reason and solutions of floods, earthquake, cyclone and landslides, Meaning of Climate change, Reasons and solution to greenhouse gases, acid rain and global warming.

Suggested Readings:

- Text Book of Environmental Studies by D. K. Asthana, S. Chand Publishing.
- Fundamentals of Environmental Studies by M. Basu, S. Xavier, Cambridge University Press.
- Environment, edited by R. N. Basu, University of Calcutta, Kolkata.
- Environmental Science by T. O. Miller Jr., Wadsworth Publishing Co.
- Environmental Management by K. D. Wagner, W.B. Saunders Co., Philadelphia

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Multidisciplinary nature of environmental studies	https://nptel.ac.in/courses/122102006
	Ecosystem	https://archive.nptel.ac.in/content/storage2/courses/122103039/pdf/mod6.pdf
Unit-II	Renewable and non-renewable resources	https://archive.nptel.ac.in/courses/121/106/121106014
Unit-III	Biodiversity and its conservation	https://nptel.ac.in/courses/129105008
Unit-IV	Environmental Pollution	https://archive.nptel.ac.in/courses/123/105/123105001/

Course Code	**VAC-115A**				
Category	Value Added Courses				
Course Title	**Health and Wellness**				
Scheme and Credits	L	T	P	**Credits**	**Semester-I**
	2	0	0	**2**	
Course Objectives	The objective of this course is: • To enhance physical fitness through regular exercise and Balanced diet. • To adopt health and wellness routines to accommodate the demand of a fast-paced, modern lifestyle.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total	50 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall and define key concepts of health, wellness, malnutrition, body systems, and diseases, and identify factors influencing health.
CO2	Explain the differences between health and wellness, the importance of nutrition, and the impact of mental and physical health factors.
CO3	Apply knowledge of diet, nutrition, and exercise to promote healthy living, manage lifestyle diseases, and prevent malnutrition.
CO4	Analyze the effects of modern lifestyle, stress, and unhealthy habits on health, and identify strategies for disease prevention and management.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 mark each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction: Definition and differentiate health and wellness, Importance of health and wellness education, Local, Demographic, Societal issues and factors affecting health and wellness, Diet and nutrition for health & wellness, Essential components of balanced diet for healthy living with specific reference to the role of Carbohydrates, Proteins, Fats, Vitamins and Minerals.

Unit-II

Malnutrition: Under nutrition and Over nutrition, processed foods and unhealthy eating habits, Body systems and common diseases, Sedentary lifestyle and its risk of disease, Stress, Anxiety, Depression, Factors affecting mental health, Identification of suicidal tendencies, Substance abuse (Drugs, Cigarette, Alcohol), De addiction, Counseling and Rehabilitation.

Unit-III

Management of Health and Wellness: Origin of yoga, Definition and scope of yoga, Limitation, Importance of yoga, Healthy foods for prevention and progression of Cancer, Hypertension, Cardiovascular, Metabolic diseases (Obesity, Diabetes, Polycystic Ovarian Syndrome), Types of physical fitness and its health benefits.

Unit-IV

Modern lifestyle: Modern lifestyle and hypo-kinetic diseases, Prevention and management through exercise, Postural deformities and corrective measures, Spirituality and mental health, Role of Yoga, asana and meditation in maintaining health and wellness, Role of sleep in maintenance of physical and mental health.

Suggested Readings:

- Physical Activity and Health by Claude Bouchard, Steven N. Blair, and William L. Haskell.
- Mental Health Workbook by Emily Attached and Marzia Fernandez.
- Mental Health Workbook for Women: Exercises to Transform Negative Thoughts and Improve Well-being by Nashay Lorick.
- Lifestyle Diseases Management by C. Nyambichu and Jeff Lumiri.
- Physical Activity and Mental Health by Angela Clow and Sarah Edmunds.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction of health and wellness	https://www.youtube.com/watch?v=b_rB4S_D5dU
Unit-II	Malnutrition	https://www.youtube.com/watch?v=Ua-dLw2nFs4
Unit-III	Management of Health and Wellness	https://www.youtube.com/results?search_query=Modernlifestyle
Unit-IV	Modern lifestyle	https://www.youtube.com/watch?v=Y84eLN9q0x8

Course Code	**DSC-BCA-102A**				
Category	Discipline-Specific Courses-Major Course				
Course Title	**Digital Logic Design**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	4	0	0	**4**	
Course Objectives	The objectives of this course are to • Understand and apply the principles of Boolean algebra, logic gates, and simplification methods (such as Karnaugh maps) for the efficient design and optimization of combinational and sequential digital circuits. • Develop a strong foundation in number systems, binary codes, and error detection techniques while gaining expertise in designing and implementing key digital systems like adders, counters, registers, and flip-flops for real-world applications.				
Assessment	30 Marks				
End Semester Examination	70 Marks				
Total	100 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated	RBT Level
CO1	Recall the key concepts of digital systems, number systems, Boolean algebra, and logic gates for circuit design.	Level 1: Remember
CO2	Explain the operation and principles behind digital logic gates, Boolean functions, and the design of combinational circuits.	Level 2: Understand
CO3	Apply digital logic design techniques to construct combinational and sequential circuits, including adders, multiplexers, and flip-flops.	Level 3: Apply
CO4	Analyze complex digital circuits, evaluate the efficiency of various logic gate configurations, and identify optimization opportunities in circuit designs using K-map methods.	Level 4: Analyze

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 2 marks each from all units and remaining 8 questions of 14 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Digital Systems and Binary Numbers: Digital Systems: Digital Signals, Digital Waveforms, Digital Computers and Digital Integrated Circuits. **Number Systems:** Binary Number Systems, Octal and Hexadecimal Number System. Number Base Conversions. Complements, Signed Binary Numbers and Binary Codes, Error Detection and Correction codes.

Boolean Algebra and Logic Gates: Boolean Algebra: Axiomatic Definition, Theorems and Properties. Boolean Functions, Canonical Standard forms: SOP and POS forms.

Digital Logic Gates: NOT, OR, AND, NOR, NAND, XOR and XNOR. Universal Gates and their implementation

Unit-II

Gate Level Minimization: Karnaugh Map (K-map) Method: Simplification: Algebra postulates and Canonical forms. Prime Implicants: Types, Determination and Selection of Prime implicants, Don't Care Conditions, NAND and NOR implementation.

Unit-III

Combinational Circuits: Introduction, Characteristics and Designing principles of Combinational circuits. Binary Adder: Half-Adder & Full-Adder, Subtractor: Half-Subtractor & Full-Subtractor, Parallel binary Adder/Subtractor, Binary Multiplier, Comparators, Multiplexers, De-multiplexers, Encoders and Decoders.

Unit-IV

Sequential Circuits: Characteristics of Sequential Circuits, Latches, **Flip-Flops:** Introduction, S-R Flip flop, J-K Flip Flop, D Flip flop, T Flip flop and Master Slave Flip flop.
Registers: Shift Registers, Applications of Registers.
Counters: Asynchronous & Synchronous Counters. Modulo-N Counters and Up-Down Counters.

Suggested Readings:

- Digital Logic and Computer Design by Mano, M.M, Prentice- Hall of India.
- Digital Design and Computer Organisation by Gill, Nasib Singh and Dixit J.B., University Science Press (Laxmi Publications), New Delhi.
- Computer Organisation & Architecture by Stallings, William.
- Digital Design, Prentice by Mano, M.M.,Hall of India.
- Fundamentals of Digital Circuits by Anand Kumar, PHI.
- Digital Electronics by Tokheim, TMH.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Digital Systems and Binary Numbers	https://www.youtube.com/watch?v=aduM2zyf6p4&t=9s
	Number Systems	https://www.youtube.com/watch?v=pLTDDsvMnFQ
	Digital Logic Gates	https://www.youtube.com/watch?v=9kBog5wYVKM
Unit-II	Karnaugh Map (K-map) Method	https://www.youtube.com/watch?v=igwR1-1cImw
Unit-III	Multiplexer	https://www.youtube.com/watch?v=JR6_a3KPKHE
	Encoder	https://www.youtube.com/watch?v=_MZHAO2qqYw
Unit-IV	Sequential Circuits	https://www.youtube.com/watch?v=rwtxSnyPXwI
	D Flip flop	https://www.youtube.com/watch?v=oEkl2LjmPnw
	Registers	https://www.youtube.com/watch?v=sFzDOKblUnY

Course Code	**DSC-BCA-104A**				
Category	Discipline-Specific Courses –Major Courses				
Course Title	**Data and File Structure**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	3	0	0	**3**	
Course Objectives	The objectives of this course are to • Understand and implement basic data structures (arrays, stacks, queues, linked lists, trees) and their operations. • Learn and apply searching, sorting algorithms, and file organization techniques for efficient data management.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall key concepts related to data structures, such as arrays, stacks, queues, linked lists, trees, graphs, and file structures.
CO2	Explain the fundamental principles of data structures, their operations, and their applications, including searching, sorting, and file organization techniques.
CO3	Apply data structure concepts and algorithms to implement basic operations like insertion, deletion, searching, and sorting on arrays, stacks, queues, and linked lists.
CO4	Analyze the efficiency of different searching and sorting algorithms, compare their time complexities, and assess the suitability of different data structures for specific applications.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction: Elementary data organization, Data Structure definition, Data type vs. data structure, Categories of data structures, Data structure operations, Applications of data structures.

Arrays: Introduction, Linear arrays, Representation of linear array in memory, address calculations, Traversal, Insertions, Deletion in an array, Multidimensional arrays, Parallel arrays, Sparse arrays.

Searching: Introduction, Sequential search, Binary search, Prerequisite for binary search, Comparison in terms of efficiency.

Unit-II

Sorting: Bubble sort, Selection sort, Insertion sort, Quick sort, Merge sort, Comparison in terms of their efficiency

Stack: Introduction, Array and linked representation of stacks, Operations on stacks, Applications of stacks: Polish notation, Recursion.

Queues: Introduction, Array and linked representation of queues, Operations on queues, Deques, Priority Queues, Applications of queues.

Unit-III

Linked List: Introduction, Representation of linked lists in memory, Traversal, Insertion, Deletion, Searching in a linked list, Header linked list, Circular linked list, Two-way linked list, Threaded lists, Garbage collection, Applications of linked lists.

Tree: Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks.

Graph: Introduction, Graph Theory terminology, Sequential and Linked representation of Graphs.

Unit-IV

Introduction to file structures: Concept of a file, types of files, File operations - open, read, write, close. External storage devices, Concepts of record, file, database and database system.

File Organization: Sequential file organisation – structures and processing, Record structures and access methods. Indexed sequential file organisation – structures and processing, Indexing techniques, B-trees and hashing for indexed files. Direct file organisation. Hashed File Organization - Hash function implementation.

Suggested Readings:

- Data Structure by Seymour Lipschutz, Tata-McGraw-Hill
- Fundamentals of Data Structures in C by Horowitz, Sahni & Anderson-Freed, Orient Longman.
- An Introduction to Data Structures With Applications by Trembley, J.P. And Sorenson P.G., McGraw-Hill International Student Edition, New York.
- Data Structures and Algorithm Analysis In C by Mark Allen Weiss, Addison- Wesley, (An Imprint Of Pearson Education), Mexico City. Prentice- Hall Of India Pvt. Ltd., New Delhi.
- Data Structures Using C by Yedidyan Langsam, Moshe J. Augenstein, and Aaron M. Tenenbaum, Prentice- Hall of India Pvt. Ltd., New Delhi.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction of data structure	https://youtu.be/zWg7U0OEAoE?feature=shared
	Arrays	https://www.youtube.com/watch?v=5MtwWJEqwKo&t=3965s
	Searching	https://www.youtube.com/watch?v=r1-8p11fSPw&t=1s
Unit-II	Sorting	https://www.youtube.com/watch?v=4OxBvBXon5w
	Stack	https://www.youtube.com/watch?v=g1USSZVWDsY
	Queue	https://archive.nptel.ac.in/courses/106/102/106102064/
Unit-III	Tree	https://archive.nptel.ac.in/courses/106/102/106102064/
	Graph	https://www.youtube.com/watch?v=9zpSs845wf8
Unit-IV	Introduction to file structures	https://youtu.be/jp6vnN5K-eI?feature=shared
	File Organization	https://youtu.be/TK2Uzba7N7g?feature=shared

Course Code	**LC-BCA-106A**				
Category	Discipline-Specific Courses –Major Courses				
Course Title	**Data and File Structure Lab**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	0	0	2	**1**	
Course Objectives	The objectives of this course are to • Gain practical experience in implementing and manipulating fundamental data structures such as arrays, stacks, queues, and linked lists. • Practice implementing searching, sorting algorithms, and file organization techniques, and analyze their efficiency through practical applications.				
Assessment	10 Marks				
End Semester Examination	15 Marks				
Total	25 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Apply C programming techniques to implement algorithms, manipulate arrays, and perform data structure operations to solve real-world problems.
CO2	Analyze C programs, algorithms, and data structures to identify issues, optimize solutions, and ensure correctness and efficiency.
CO3	Evaluate different programming techniques, algorithms, and data structures, selecting the most efficient methods to address complex computing challenges.
CO4	Design and implement efficient programs using advanced C concepts, algorithms, and data structures to solve complex problems effectively.

Exp. No.	Contents
1.	Write a C program to demonstrate basic data structure operations such as creating, inserting, deleting, and displaying elements in an array.
2.	Write a C program to insert and delete an element at a specified position in a linear array.
3.	Write a C program to implement and demonstrate a sequential search on an array.
4.	Write a C program to implement and demonstrate a binary search on a sorted array.
5.	Write a C program to implement and demonstrate the Bubble sort algorithm.
6.	Write a C program to implement and demonstrate the Selection sort algorithm.
7.	Write a C program to implement and demonstrate the Insertion sort algorithm.
8.	Write a C program to implement and demonstrate the Quick sort algorithm.
9.	Write a C program to implement and demonstrate the Merge sort algorithm.
10.	Write a C program to implement a stack using an array and perform basic stack operations: push, pop, and display.
11.	Write a C program to implement a queue using an array and perform basic queue operations: enqueue, dequeue, and display.
12.	Write a C program to implement a singly linked list and perform insertion, deletion, and traversal operations.

Useful Video links:

Experiment no.	Experiment name	Links
1	Program to insert and delete an element at a specified position in a linear array.	https://www.youtube.com/watch?v=TXcz8FTulzY
2	Program to implement and demonstrate a binary search on a sorted array.	https://www.youtube.com/watch?v=JQxGS5HLxg8
3	Program to implement and demonstrate the Bubble sort algorithm.	https://www.youtube.com/watch?v=C426zQV2XOg
4	program to implement and demonstrate the Selection sort algorithm.	https://www.youtube.com/watch?v=00CNTz2GvO8
5	Program to implement and demonstrate the Insertion sort algorithm.	https://www.youtube.com/watch?v=oZgbwa8lvDE
6	Program to implement and demonstrate the Quick sort algorithm.	https://www.youtube.com/watch?v=6PSBJD26En0
7	Program to implement and demonstrate the Merge sort algorithm.	https://www.youtube.com/watch?v=V7fvTmhqokM&t=200s
8	Program to implement a stack using an array	https://www.youtube.com/watch?v=baSVZqQhCVk
11	Program to implement a queue using an array	https://www.youtube.com/watch?v=THMyk2_p530
12	Program to implement a singly linked list	https://www.youtube.com/watch?v=K7VIKlUdo20

Course Code	**MV-BCA-108A**				
Category	Minor Vocational				
Course Title	**Programming in C & Data Structure**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	3	0	0	**3**	
Course Objectives	The objectives of this course are to • Develop proficiency in C programming fundamentals, including data types, operators, control structures, functions, arrays, and pointers for effective problem-solving. • Gain expertise in implementing and using fundamental data structures, such as arrays, linked lists, stacks, queues, and trees, and understanding their practical applications.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall fundamental concepts of C programming, data types, functions, arrays, pointers, and basic data structures like stacks, queues, and trees.
CO2	Explain the syntax and structure of C programs, the role of functions, arrays, pointers, and how data structures like stacks, queues, and graphs are represented and utilized.
CO3	Apply C programming skills to write and debug programs involving variables, operators, functions, arrays, and implement basic data structures like stacks, queues, and linked lists.
CO4	Analyze and evaluate C programs and data structures, identifying inefficiencies or errors, and determine the best data structure for specific problem-solving scenarios.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

C Programming Fundamentals: Basic concepts of a C program, Declaration, Assignment & Print statements, Data Types, operators and expressions, decision making & branching, Programming examples.

Unit-II

Functions: Standard Mathematical functions, Input/output: Unformatted & formatted I/O function in C, Input functions, output functions.
User defined functions: Introduction/Definition, prototype, Local and global variables, passing parameters.
Introduction to array and pointers.

Unit-III

Introduction: Elementary data organization, Data Structure, Categories of data structures, Data structure operations, Applications of data structures.

Linear Data Structure: Array, Linked List, Stack, Queue and their Implementation.

Unit-IV

Non-Linear Data Structure: Tree; Introduction, Definition, Representing Binary tree in memory, Traversing binary trees, Traversal algorithms using stacks.

Graph: Introduction, Graph theory terminology, Sequential and linked representation of graphs.

Suggested Readings:

- Let us C by Yashwant Kanetker, BPB.
- Computer Programming in C by Rajaraman, V., PHI.
- Working with C by Yashwant Kanetker, BPB.
- An Introduction to Data Structures With Applications by Trembley, J.P. And Sorenson P.G., McGraw-Hill International Student Edition, New York.
- Data Structures and Algorithm Analysis In C by Mark Allen Weiss, Addison- Wesley, (An Imprint Of Pearson Education), Mexico City.Prentice- Hall Of India Pvt. Ltd., New Delhi.
- Data Structures Using C by Yedidyan Langsam, Moshe J. Augenstein and Aaron M. Tenenbaum, Prentice- Hall of India Pvt. Ltd., New Delhi.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Basics of C Programming	https://youtu.be/XTiIiI-LOY8?feature=shared
	Operators	https://youtu.be/wiY0O_tHyrI?feature=shared
Unit-II	Functions	https://youtu.be/CUBwN0rHxvg?feature=shared
	Introduction to array and pointers.	https://archive.nptel.ac.in/courses/106/105/106105151/
Unit-III	Introduction To Data Structure	https://youtu.be/zWg7U0OEAoE?feature=shared
	Stack	https://youtu.be/g1USSZVWDsY?feature=shared
	Queue and Linked list	https://youtu.be/PGWZUgzDMYI?feature=shared
Unit-IV	Tree	https://youtu.be/tORLeHHtazM?feature=shared
	Graph	https://youtu.be/9zpSs845wf8?feature=shared

Course Code	**LC-BCA-110A**				
Category	Minor Vocational				
Course Title	**Programming in C & Data Structure Lab**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	0	0	2	**1**	
Course Objectives	The objectives of this course are to • Learn to design and implement structured C programs using control statements, functions, arrays, and pointers for problem-solving. • Develop knowledge of fundamental data structures like arrays, stacks, queues, and trees for efficient data management and algorithm implementation.				
Assessment	10 Marks				
End Semester Examination	15 Marks				
Total	25 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Apply C programming techniques to write functional code for tasks such as mathematical calculations, array manipulations, and data structures.
CO2	Analyze and troubleshoot errors in C programs by breaking down code and identifying logical or syntax issues.
CO3	Evaluate and select appropriate C programming methods and tools to optimize program performance and solve real-world problems.
CO4	Create efficient C programs by integrating knowledge of data structures, functions, and libraries to solve complex challenges.

Exp. No.	Contents
1.	Write a C program to declare variables, assign values to them, and print the values using printf().
2.	Write a C program to demonstrate the working of various operators (arithmetic, relational, logical,and bitwise).
3.	Write a C program to find the largest of three numbers using if-else statements.
4.	Write a C program to demonstrate the use of switch statement.
5.	Write a C program to demonstrate the use of loops (for, while, do-while) by printing the first 10 numbers.
6.	Write a C program to use standard mathematical functions like sqrt(), pow(), and abs().
7.	Write a C program to demonstrate the use of unformatted and formatted input/output functions (getchar(), putchar(), scanf(), printf()).
8.	Write a C program to define and use a user-defined function to calculate the area of a circle.
9.	Write a C program to swap two numbers using call by value and call by reference (pointers).
10.	Write a C program to insert and delete an element at a specified position in a linear array.
11.	Write a C program to implement a stack using an array and perform basic operations: push, pop, and display.
12.	Write a C program to implement a queue using an array and perform basic operations: enqueue, dequeue, and display.

Useful Video links:

Experiment no.	Experiment name	Links
1	Program on Arithmetic, Relational, Logical, Assignment, Bit wise Operators	https://youtube.com/watch?v=jlQmeyce65Q&t=288s
2	Program to use of switch statement	https://www.youtube.com/watch?v=0g82dDC-mtc
3	Program to Print 1-10 Number using For Loop, While Loop & Do While Loop	https://www.youtube.com/watch?v=whKYtLcLODo
4	Program to insert and delete an element at a specified position in a linear array.	https://www.youtube.com/watch?v=3Xo6P_V-qns
5	Program to implement a stack using an array	https://www.youtube.com/watch?v=baSVZqQhCVk
6	program to implement a queue using an array	https://www.youtube.com/watch?v=THMyk2_p530

Course Code	**SEC-112A**				
Category	Skill Enhancement Courses				
Course Title	**Python Programming**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	1	0	0	**1**	
Course Objectives	The objectives of this course are to • Learn the basics of Python programming, including data types, flow control, and file handling. • Understand how to connect to and interact with databases using Python, including performing CRUD operations and handling transactions.				
Assessment					
End Semester Examination	25 Marks				
Total	25 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall the fundamental concepts of Python programming, including its features, data types, control structures, file operations, and database programming basics.
CO2	Explain Python syntax, flow control statements, complex data types like strings and lists, and how Python interacts with files and databases.
CO3	Apply Python programming concepts to solve problems using control structures, data types, string manipulation, file operations, and database interactions.
CO4	Analyze Python programs to identify logic errors, evaluate the use of data types, and determine the most effective way to manage file and database operations.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 1 marks each from all units and remaining 8 questions of 5 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction to Python: History and Features of Python Programming, Basics of Python: Keywords, Variables, Operators, I/O Statements, Indentation, and Comments. Python Basic Data Types, Data Types Declaration, and Implementation.

Unit-II

Flow Control Statement: if statement, if-else statement, nested-if statement, if-else, if-else ladder, While loop, range() Function, For Loop, Nested Loops, Infinite Loop, Break Statement, Continue Statement, Pass Statement.

Unit-III

Python Complex data types: String Data Type, String Manipulation Methods and implementation using Python Programming.

List and Dictionary Data Type, Declaration, and Implementation using Various built-in Functions and Libraries.

Unit-IV

Python File Operations: Reading Files, Writing Files in Python, Understanding Read Functions: read(), readline(), readlines(), Understanding Write Functions: write() and writelines() Manipulating file pointer using seek Programming, using file operations.

Database Programming: Connecting to a Database, Creating Tables, INSERT, UPDATE, DELETE and READ operations, Transaction Control, Disconnecting from a database, and Exception Handling in Databases.

Suggested Readings:

- Al Sweigart: Automate the Boring Stuff with Python.
- Think Python: How to Think Like a Computer Scientist, 2nd Edition by Allen B. Downey, Green Tea Press
- Introduction to Computer Science Using Python, 1st Edition by Charles Dierbach, Wiley India Pvt Ltd.
- Core Python Applications Programming, 3rd Edition by Wesley J Chun, Pearson Education India
- Data Structures and Algorithms in Python, 1st Edition by Roberto Tamassia, Michael H Goldwasser, Michael T Goodrich, Wiley India Pvt Ltd
- Python Programming using problem solving approach by Reema Thareja, Oxford University press.
- Python for Everybody: Exploring Data Using Python 3, 1st Edition by Charles R. Severance, Shroff Publishers.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	History and Features of Python Programming	https://youtu.be/8ndsDXohLMQ?feature=shared
	Data Types of Python	https://youtu.be/8n4MBjuDBu4?feature=shared
Unit-II	Conditional Statements	https://www.youtube.com/watch?v=9xiFcK3MRYA&t=25s
	Loops in Python	https://youtu.be/jFLCMFewIUc?feature=shared
	break, continue and pass	https://youtu.be/SVAVQHfJbE0?feature=shared
Unit-III	String data type	https://youtu.be/sS89tiDuqoM?feature=shared
	String Manipulation	https://youtu.be/e45MVXwya7A?feature=shared
	List and Dictionary Data Type	https://youtu.be/X8Nj5cxaP9E?feature=shared
Unit-IV	Basics of File Operations	https://youtu.be/o5MBF0yo6lA?feature=shared
	Reading and Writing Files in python	https://youtu.be/rYLJaAdgLhI?feature=shared

<table>
<tr><td>Course Code</td><td colspan="6">LC-SEC-114A</td></tr>
<tr><td>Category</td><td colspan="6">Skill Enhancement Courses</td></tr>
<tr><td>Course Title</td><td colspan="6">Python Programming Lab</td></tr>
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<tr><td>0</td><td>0</td><td>4</td><td>2</td></tr>
<tr><td>Course Objectives</td><td colspan="6">The objectives of this course are to
• Learn the basics of Python programming, including data types, flow control, and file handling.
• Understand how to connect to and interact with databases using Python, including performing CRUD operations and handling transactions.</td></tr>
<tr><td>Assessment</td><td colspan="6">15 Marks</td></tr>
<tr><td>End Semester Examination</td><td colspan="6">35 Marks</td></tr>
<tr><td>Total</td><td colspan="6">50 Marks</td></tr>
<tr><td>Duration of Exam</td><td colspan="6">03 Hours</td></tr>
</table>

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Implement programming solutions for mathematical operations, string manipulations, searching, sorting, and problem-solving tasks using appropriate algorithms.
CO2	Break down complex programming problems into smaller, manageable tasks, and identify patterns and relationships in the data.
CO3	Assess and critique the effectiveness of different algorithms and programming solutions in terms of time, space, and correctness.
CO4	Design and develop original software programs by combining various programming concepts, data structures, and algorithms for problem-solving.

Exp. No.	Contents
1.	Write a program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2.	Write a program to find the factorial of the given number.
3.	Write a program, using user-defined function to find the area of a rectangle, square, circle and triangle by accepting suitable input parameters from the user.
4.	Write a program to display the first n terms of the Fibonacci series.
5.	Write a program to find whether the given number is Armstrong Number or not.
6.	Write a program to create a function that accepts a string and calculates the number of upper-case letters and lower-case letters.
7.	Write a program to perform string operations (concatenation, slicing, indexing, and length).
8.	Write a program to find the largest and smallest number in a matrix entered by the user.
9.	Write a program to count the number of even and odd numbers from N numbers.
10.	Write a program to find the largest and smallest numbers in the list entered by the user.
11.	Write a program to sort a list of elements using the bubble sort algorithm.
12.	Write a program to implement a linear search algorithm to search an element in the list entered by a user.

Useful Video links:

Experiment no.	Experiment name	Links
1	Program to find the factorial of the given number.	https://youtu.be/6lTY2GZJvQ8?feature=shared
2	Program to display the first n terms of the Fibonacci series.	https://youtu.be/OgQ4j5Xw8t0?feature=shared
3	Program to perform string operations (concatenation, slicing, indexing, and length).	https://www.youtube.com/watch?v=rcGeNl95Gv4
4	Program to sort a list of elements using the bubble sort algorithm.	https://youtu.be/4OxBvBXon5w?feature=shared
5	Program to implement a linear search algorithm to search an element in the list entered by a user.	https://youtu.be/IAy8Hgx6wwU?feature=shared

Course Code	**MDC-BBA-102A**				
Category	Multidisciplinary Courses				
Course Title	**Marketing Management**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	3	0	0	**3**	
Course Objectives	The objectives of this course are • To help the students analyze marketing activities within a firm and apply marketing concepts and theories to realistic marketing situations. • To help the students for develop a better appreciation and understanding of the role of marketing in a business organization specifically, and in our society at large.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Recall fundamental marketing concepts, including the nature and scope of marketing, consumer behavior, market segmentation, product life cycle, and promotional strategies.
CO2	Explain the core principles of marketing, consumer buying behavior, the product development process, pricing strategies, and the role of promotional and distribution channels.
CO3	Apply marketing concepts to design product strategies, determine pricing models, develop promotional plans, and select appropriate distribution channels to address market needs.
CO4	Analyze market environments, consumer behavior, and competitive dynamics to identify strategic opportunities for market segmentation, targeting, and positioning.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction to Marketing: Nature, Scope, Core concepts of marketing, Tasks of marketing management, corporate orientation towards marketplace, Marketing environment, Ethical issues in marketing.

Unit-II

Understanding consumer and Business markets: Consumer buying decision process in consumer and business markets, building customer value, Satisfaction and loyalty, Market segmentation, targeting and positioning approaches to deal with market competition, Tools of product differentiation.

Unit-III

Product and Pricing Decisions: Product life cycle, Product mix and product line decisions, new product development process, Branding, Packaging and labeling decisions, Determinants of price, Pricing methods and strategies.

Unit-IV

Promotion and Distribution Decisions: Promotion mix, Advertising and sales promotion, public relations, Personal selling, Channels of distribution, Functions of intermediaries, Channel design decisions, Selecting channel members, Channel management, Wholesaling and Retailing.

Suggested Readings:

- Marketing Management by Kotler, Philip and Keller, Pearson Education
- Marketing Management in South Asian Perspective by Kotler, Philip, Kevin Keller, A. Koshy, and M. Jha, Pearson Education
- Marketing by Kerin, Hartley, Berkowitz, and Rudelius, TMH
- Marketing: Concepts and Cases by Etzel, Michael J., TMH
- Marketing Management Text and Cases by Dhunna, Mukesh, Wisdom Publications Managing
- Marketing An Applied Approach by Capon, Noel and Singh, Siddharth, Wiley Publications

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction to Marketing	https://onlinecourses.nptel.ac.in/noc22_mg57/preview
Unit-II	Consumer Behaviour	https://youtu.be/dptzjrKRAm8?feature=shared
Unit-III	Product Pricing	https://youtu.be/obdqjcWFWyc?feature=shared
Unit-IV	Introduction to sales Management	https://youtu.be/MPZgEJMS97o?feature=shared

Course code	**MDC-BBA-104A**				
Category	Multidisciplinary Courses				
Course title	**Entrepreneurship and MSME**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	3	0	0	**3**	
Course Objectives	The objectives of this course are • To explore entrepreneurship concepts, characteristics, and its role in economic development. • To learn about feasibility studies, business plans, and market analysis for new ventures. • To understand financing options, venture capital, and legal issues like intellectual property rights. • To understand the role, challenges, and government initiatives supporting MSMEs in India.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total Marks	75				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall fundamental concepts of entrepreneurship, including characteristics of entrepreneurs, the process of starting a venture, sources of finance, and the role of MSMEs in India.
CO2	Explain the key elements of entrepreneurship, such as environmental scanning, feasibility studies, and the dynamics of MSMEs, and the impact of entrepreneurship on economic development.
CO3	Apply entrepreneurial concepts to create a business plan, conduct market feasibility studies, and identify financing options, including debt and equity, for new ventures.
CO4	Analyze business opportunities and challenges by assessing competitor and industry dynamics, evaluating business plans, and conducting financial feasibility assessments for entrepreneurial ventures.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction: Concept of Entrepreneurship, Knowledge and skills requirement, Characteristics of successful Entrepreneurs, Role of Entrepreneurship in Economic Development, Entrepreneurship process, Factors Impacting Emergence of Entrepreneurship, Managerial vs. Entrepreneurial Approach, Emergence of Entrepreneurship.

Unit-II

Creating Entrepreneurial Venture: Environmental Scanning, Competitor and Industry Analysis, Feasibility Study, Market Feasibility, Technical and Operational Feasibility, Financial Feasibility, Drawing Business Plan, Preparing Project Report, Business Plan to Investors.

Unit-III

Sources of Finance: Debt or Equity Financing, Commercial Banks, Venture Capital, Financial Institutions Supporting Entrepreneurs, Legal Issues, Intellectual Property Rights, Patents, Trademarks, Copyrights, Trade Secrets, Licensing, Franchising.

Unit-IV

Role and Dynamics of MSMEs in India: Micro, Small and Medium-Sized Enterprises (MSME) in India, Meaning and Nature of MSME in India, Role of MSME in Socio-Economic Development, Problems faced by MSME, Role of Innovation and Entrepreneurship for MSME, Government Initiatives for MSME Sector.

Suggested Readings:

- Entrepreneurship by Hisrich, Robert D., Michael Peters, and Dean Shepherd, Tata McGraw Hill.
- Entrepreneurship by Barringer, Bruce R., and R. Duane Ireland, Pearson Prentice Hall, New Jersey (USA).
- Entrepreneurship Development and Small Business Enterprises by Charantimath, Poornima, Pearson Education.
- Entrepreneurship by Kuratko, Donald and Richard Hodgetts, Cengage Learning India Pvt. Ltd.
- Essentials of Entrepreneurship and Small Business Management by Scarborough, N. M., and Cornwall, J. R., Pearson, Essex.

Useful Video links:

Unit No	Topics	Links
Unit-I	Introduction	https://youtu.be/ICYqc5_mJ5g?feature=shared
Unit-II	Creating Entrepreneurial Venture	https://youtu.be/fljL-8dTgVY?feature=shared
Unit-III	Sources of Finance	https://youtu.be/_LePYVXT-hY?feature=shared
Unit-IV	Role and Dynamics of MSMEs in India	https://www.youtube.com/watch?v=pEF1lSI340M

Course Code	**MDC-CSA-106A**				
Category	Multidisciplinary Courses				
Course Title	**Basics of Multimedia**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	3	0	0	**3**	
Course Objectives	The objectives of this course are • To introduce the knowledge about the basic's concepts of multimedia and its applications. • To overview the knowledge of its relevance with the internet and its future aspects.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total	75 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Recall the basic concepts of multimedia, including types of media, hardware and software components, file formats and standards in video and image creation.
CO2	Explain the various multimedia components, including image creation, video production, data compression techniques, and the role of hardware and software in multimedia production.
CO3	Apply multimedia skills to create images, videos, and other multimedia content using appropriate software, and implement compression techniques for efficient storage and delivery.
CO4	Analyze multimedia projects, evaluating the effectiveness of design choices, compression algorithms, and production processes to optimize multimedia content for different platforms.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction of Multimedia: Definitions, Basic properties and medium types (Temporal and non-temporal), Multimedia applications, Uses of Multimedia, Introduction to making multimedia, Stages of project, Requirements to make good multimedia, Multimedia skills and training.

Unit-II

Multimedia Hardware and Software: Multimedia Hardware, Macintosh and Windows production Platforms, Hardware peripherals connections, Memory and storage devices, Media software basic tools, Making instant multimedia, Multimedia software and Authoring tools, Production standards.

Unit-III

Image: Creation of image (BMP & vector), Image colour models, Image file format, Image compression.
Video: Video broadcast standard (PAL, NTSC), Shooting and editing video, Video file formats, Video tips, Video compression, MPEG standards.
Data Compression: Introduction, Need, Difference of lossless/ lossy compression techniques, Brief overview to different compression algorithms concern to text, Audio, Video and images.

Unit-IV

Multimedia-looking towards Future: Digital communication and new media, Interactive television, digital broadcasting, Digital radio, Multimedia conferencing, Virtual reality, Digital camera, Assembling and delivering a multimedia project planning and costing, Designing and Producing, Content and Talent, Delivering, CD-ROM, The CD family, Production process, CD overview, Media types technology.

Suggested Readings:

- Multimedia Making it work by Tay Vaughan, TMH.
- Multimedia system by Rajneesh Aggarwal, Excel Publication.
- Fundamental of Multimedia by Li & Drew, Pearson Education.
- Multimedia Computing Communications Applications by Ralf Steinmetz and Klara Naharstedt, Pearson.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction of Multimedia	https://www.youtube.com/watch?v=RR6Ben6qVnE
Unit-II	Multimedia Hardware and Software	https://www.youtube.com/watch?v=0UgCqmnfDHk
Unit-III	Image and Video	https://www.youtube.com/watch?v=5wRPin4oxCo
Unit-IV	Digital Communication	https://youtu.be/4NYt34yNWqU?feature=shared

Course code	**MDC-ASH-108A**				
Category	Multidisciplinary Courses				
Course title	**Introduction to Statistics**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	3	0	0	**3**	
Course Objectives	The objectives of this course are ● To develop foundational knowledge of statistics, including its origin, scope, limitations, and data types, while learning methods for organizing and presenting data effectively. ● To build analytical skills in interpreting data through central tendency, dispersion, index numbers, and time series analysis for practical problem-solving and decision-making.				
Assessment	25 Marks				
End Semester Examination	50 Marks				
Total Marks	75				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

COs	Skills Demonstrated
CO1	Recall fundamental statistical concepts such as data types, measures of central tendency, measures of dispersion, index numbers, and time series analysis.
CO2	Explain the various statistical measures including arithmetic mean, median, mode, standard deviation, index numbers, and the components of time series analysis.
CO3	Apply statistical techniques to calculate and interpret measures of central tendency, dispersion, index numbers, and time series for real-world datasets.
CO4	Analyze statistical data, identifying trends, patterns, and outliers, and evaluate the suitability of different statistical measures based on the nature of the data.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 5 parts of 2 marks each from all units and remaining 8 questions of 10 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction to Statistics: Meaning and Scope, Origin, Development and Definition of Statistics, Importance and Scope of Statistics, Limitations and Distrust of Statistics. Data, Primary and Secondary Data, Qualitative and Quantitative Data, Discrete and Continuous Data, Ungrouped and Grouped Data.

Unit-II

Measures of Central Tendency: Arithmetic Mean, Weighted Mean, Geometric Mean and Harmonic Mean, Median and Mode, Characteristics for an Ideal Measure of Central Tendency, Merits and Demerits of Measures of Central Tendency.

Unit-III

Measures of Dispersion: Range, Inter-quartile Range, Quartile Deviation, Mean Deviation, Standard Deviation and Root Mean Square Deviation, Coefficient of Variation, Measures of Skewness and Kurtosis, Characteristics for an Ideal Measure of Dispersion

Unit-IV

Index numbers: Types, uses and their construction. Cost of living index numbers. Test of adequacy of Index numbers.

Time Series: Components and Models of time series. Measurements of trend and seasonal indices, Forecasting and Estimation.

Suggested Readings:

- Levin, R.I.and Rubin D.S.,Statistics for Management,Pearson Education.
- Gupta,S.P.and Gupta,M.P.,Business Statistics,Sultan Chand and Sons.
- Sharma,J.K.,Business Statistics,Vikas Publication House Pvt.Ltd.
- Jain,T.R.and Aggarwal,S.C.,VK Global Publications Pvt.Ltd.
- Davis and Pecar: Business Statistics using Excel,Oxford University Press.

Useful Video links:

Unit No	**Topics**	**Links**
Unit-I	Introduction to Statistics	https://www.youtube.com/watch?v=76qRQo-BO-o
Unit-II	Measures of Central Tendency	https://auece.digimat.in/nptel/courses/video/110107114/L09.html
Unit-III	Measures of Dispersion	http://sdnbvc.digimat.in/nptel/courses/video/110106072/L05.html
Unit-IV	Index numbers	http://digimat.in/nptel/courses/video/109104182/L22.html

Course Code	**VAC-114A**				
Category	Value Added Courses				
Course Title	**Digital and Technological Solutions**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	2	0	0	**2**	
Course Objectives	The objectives of this course are • To provide an overview of foundational principles and terminology of digital and technological solutions. • To stay informed about current trends and advancements in digital technology to drive innovation and improvement.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total	50 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Recall fundamental concepts of digital systems, communication technologies, e-governance, digital financial tools, and emerging technologies.
CO2	Explain the significance of digital technologies, the working of computer systems, and concepts related to e-commerce and cybersecurity.
CO3	Apply knowledge of digital systems, communication networks, and e-governance tools to real-world technological and business scenarios.
CO4	Analyze the components of communication systems, digital security threats, and evaluate emerging technologies' impact on society and business.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 marks each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction and Evolution of Digital Systems: Role and significance of digital technology, Information and communication technology and tools, Computer system and its working, Software and its types, Operating systems, Types and functions, Problem solving, Algorithms and flowcharts.

Unit-II

Communication Systems: Principles, Model and transmission media, Computer networks and internet, Concepts and applications, WWW, Web browsers, Search engines, Messaging, Email, Social networking, Computer based information system, Significance and types, E-commerce and Digital marketing, Basic concepts, Benefits and challenges.

Unit-III

Digital India and E-Governance: Initiatives, Infrastructure, Services and Empowerment, Digital financial tools, Unified payment interface, Aadhar enabled payment system, USSD, Credit / Debit Cards, E-Wallets, Internet banking, NEFT/RTGS and IMPS, Online bill payments and Pos, Cyber security, Threats, Significance, Challenges, Precautions, Safety measures, Tools, Legal and ethical perspectives.

Unit-IV

Emerging Technologies and their applications: Overview of cloud computing, Big data, Internet of things, Virtual reality, Block chain and Crypto currency, Robotics, Machine learning and Artificial Intelligence, 3-D Printing, Digital signatures.

Suggested Readings:

- Introduction to Information Technology by V. Rajaraman, 3rd Edition, PHI.
- Fundamentals of Computers by E. Balagurusamy, Tata McGraw Hill.
- Data Communications and Networking by Behrouz A. Forouzan, McGraw Hill.
- Emerging Technologies in Computing: Theory, Practice, and Advances by Pramod Kumar, Anuradha Tomar, and R. Sharmila,Chapman and Hall/CRC Imprint.
- Cloud Computing: Principles and Paradigms by Buvya, Broberg, and Gosciniski, Wiley.
- Artificial Intelligence: A Modern Approach by Russell and Norvig, Pearson Education.
- Internet of Things by Samuel Greengard, MIT Press.
- E-commerce: Concepts, Models, Strategies by C.S.V. Murthy.
- Big Data for Dummies by Hurwitz, Nugent, Halper, and Kaufman, Wiley & Sons - Wiley.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Evolution of Digital Computer	https://www.youtube.com/watch?v=J8mV_skvhZc
Unit-II	Communication Systems	https://www.youtube.com/watch?v=0TQUaZcBynA&list=PLb2wGSuEdRG8lKGO4q7NXE6QDWISAsBkZ
Unit-III	Digital India & e-Governance	https://www.youtube.com/watch?v=MMlr0AyLYmI
Unit-IV	Emerging Technologies	https://www.youtube.com/watch?v=szDERpTI5lA

Course Code	**VAC-116A**				
Category	Value Added Courses				
Course Title	**Human Values and Ethics**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	2	0	0	**2**	
Course Objectives	The objective of this course are: • To learn the importance of human values like respect, honesty, and compassion. • To encourage responsibility towards the environment and society.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total	50 Marks				
Duration of Exam	03 Hours				

Course Outcomes: After successful completion of this course, the students will be able to

Cos	Skills Demonstrated
CO1	Recall key concepts of value education, human values, professional ethics, personality development, and global citizenship principles.
CO2	Explain the significance of human values, ethics, and their relationship with personal well-being, society, and global citizenship.
CO3	Apply concepts of ethics, values, and integrated personality theories to practical scenarios in professional and personal contexts.
CO4	Analyze the interplay between values, ethics, professional conduct, and personal development, evaluating their impact on well-being.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 marks each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

Introduction: Need, Scope and process of value education, Classification of Value Education, Personal Values, Social Values, Moral Values & Spiritual Values, Difference between ideology and values, Harmony with self, society and nature.

Unit-II

Human Values and Ethics: Meaning and nature of human values, Significance of human values in life, Relation between values and ethics, Relevance of Human values, Integrity, Empathy, Lok sangrah, Brahmvihara, Theory of Naya (Jainism),Deontology, Virtue Ethics, Utilitarianism.

Unit-III

Integrated Personality and Well-being: Relationship among self-identity and personality, Integrated personality with the three gunas, Theory of sankhya, Four Antah-karanas (inner instruments) in Yoga, Panchkosha (five sheaths) in Upanishad well-being and its relation to happiness.

Unit-IV

Professional Ethics and Global Citizenship: Nature, Characteristics and scope of professional ethics, Types of professional ethics, Professional values, Trusteship, Inclusiveness, Commitment, Sustainability, Accountability, Transparency, Impartiality, Values for global citizenship, Equality, Justice, Human dignity, Nature and need of

competency based education, Types of Competencies, Core competencies, Communication, Teamwork, Planning and achieving goals, Functional competencies, Analytical thinking, Knowledge sharing and learning, Decision making, Partnership building.

Suggested Readings:

- A Foundation Course in Human Values and Professional Ethics by R.R. Gaur, R. Sangal, G.P. Bagaria Excel Books.
- Professional Ethics and Human Values by D.R. Kiran, McGraw Hill Education (India).
- Happiness and Well-Being, NIOS Module V (Health and Well-being).
- Meaning and Well-Being: Indian Perspectives by Kiran Kumar, K. Salagame Journal of Constructivist Psychology.
- An Indian Conception of Wellbeing by S.K. Kiran Kumar in Henry, J. (Ed.), European Positive Psychology Proceedings Leicester, UK: British Psychological Society.
- Identity: Personal and Social by Vivian L. Vignoles (2017), Chapter to appear in Oxford Handbook of Personality and Social Psychology edited by Kay Deaux and Mark Snyder.

Useful Video Links:

Unit No.	Topics	Links
Unit-I	Introduction of value education	https://youtu.be/syZ8nrkDJi0?si=40PLK2orOBzsZRif
Unit-II	Human value and Ethics	htps://youtu.be/thHnjYMUiU0?si=XaBRqyFwN1SFLbH3
Unit-III	Integrated Personality and Well-being	https://youtu.be/7dmp4NlvUsw?si=Bag4Hh3SNvYFFEYB
Unit-IV	Professional Ethics	https://youtu.be/0g5jgHmKoBE?si=CtC0YRXnXU6IThdL

Course code	**AEC-102A**				
Category	Ability Enhancement Course				
Course title	**Hindi-I**				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	2	0	0	**2**	
Course Objectives	The objectives of this course are • विद्यार्थियों को हिन्दी भाषा के महत्त्व एवं गुणवत्ता से सुविज्ञ करवाकर हिन्दी की ओर उन्मुख करना। • विद्यार्थियों को हिन्दी–भाषा की वैज्ञानिकता के विषय में बतलाकर इसके गौरव से सुपरिचित करवाना। • हिन्दी भाषा के माध्यम से नवयुवक–नवयुवतियों को राष्ट्रीयता के पुनीत भावों की ओर उन्मुख करना।				
Assessment	15 Marks				
End Semester Exam	35 Marks				
Total Marks	50				
Duration of Exam	03 Hours				

Course Outcomes: After studying this course, the students will be able to

COs	**Skills Demonstrated**
CO1	मौलिक सिद्धांतों की अवधारणाओं को याद करें और समझें जैसे कि मानकीकरणए मानकए ंऔर दक वर्तनीए जैसे मूलभूत सिद्धांतों की अवधारणाओं को याद करें और समझें, वास्तविक दुनिया के परिदृश्यों के संदर्भ में उनके घटकों और उनके अनुप्रयोगों की पहचान करें।
CO2	बुनियादी समस्याओं को हल करने और विभिन्न विषयों में उनके महत्व का वर्णन करने के लिए वर्तनी ंऔर विसर्ग के सिद्धांतों को लागू करें।
CO3	सृजनात्मक साहित्य के संदर्भ में अर्थ परिभाषा और स्वरूपः की संरचना का विश्लेषण करें; और सिस्टम डिज़ाइन और संचार जैसे वास्तविक जीवन के अनुप्रयोगों पर उनके प्रभाव का विश्लेषण करें।
CO4	अनुवाद में उपयोग की जाने वाली विभिन्न प्रणालियों की कार्यक्षमता, संरचना और वे जटिल प्रणालियों की समग्र समझ में कैसे योगदान करती हैं, उनकी प्रभावशीलता का विश्लेषण करें।
CO5	वास्तविक दुनिया की चुनौतियों के आधार पर व्यावहारिक प्रणालियों को डिजाइन करने और समस्या निवारण में अनुवाद के ज्ञान को लागू करें।
CO6	प्रस्तुतीकरण इसके घटकों और शोधात्मकए जैसे व्यावहारिक अनुप्रयोगों के बीच संबंधों का विश्लेषण करें, विभिन्न तकनीकी क्षेत्रों में इसके कार्यान्वयन की सफलता को प्रभावित करने वाले प्रमुख कारकों की पहचान करें।

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 marks each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

लिपि का मानकीकरण, मानक वर्णमाला, देवनागरी अंक माला, अनुस्वार और विसर्ग, अनुनासिक, वर्तनी की शुद्धता के लिए ध्यान देने योग्य बातें, वर्तनी संबंधी अशुद्धियों के कारण, वर्तनी संबंधी अशुद्धियों को दूर करने के उपाय

Unit-II

सृजनात्मक साहित्य का अर्थ, परिभाषा और स्वरूपः आलोचनात्मक साहित्य का अर्थ, परिभाषा और स्वरूपः सृजनात्मक साहित्य का भाषा–विकास में महत्त्व, निबंध लेखन, कहानी लेखन, काव्य लेखन

Unit-III

अनुवाद : अर्थ, परिभाषा और स्वरूपय अनुवाद का महत्त्व, अनुवादक के गुण, अनुवाद के प्रकार : अनुवाद में कंप्यूटर का योगदान, सीरियलों का हिंदी अनुवाद, बैंकिंग साहित्य का अनुवाद, डबिंग क्षेत्र में अनुवाद, लिप्यंतरण, हिंदी साहित्य का अन्य भाषाओं में अनुवाद, अनुवाद–क्षेत्र में रोजगार

Unit-IV

पत्र प्रस्तुतीकरण का अर्थ, पत्र प्रस्तुतीकरण और नवीन शोधात्मक वैचारिकता, पत्र प्रस्तुतीकरण और शिक्षक की भूमिका, प्रस्तोता का मनोबल, वक्तृत्व कला का विकास, शोधात्मक अभिरुचि का विकास

प्रेरणास्पद पुस्तकें :

- शुद्ध लेखन और हिन्दी का मानक रूप,डॉ० हरिश्चन्द्र वर्मा, विद्या भारती, संस्कृति शिक्षा संस्थान, कुरुक्षेत्र (हरियाणा)
- बृहत् हिन्दी कोशः, सम्पा० कालिका प्रसाद, राजवल्लभ सहाय, मुकुन्दीलाल श्रीवास्तव, ज्ञानमण्डल लिमिटेड, वाराणसी
- परिशोध, मुख्य सम्पादक, डॉ० लक्ष्मीनारायण शर्मा, मानव–मूल्य विशेषांक, 1993
- भारतीय जीवनमूल्य, डॉ० धर्मपाल मैनी, भारतीय संस्कृति संस्थान, गुड़गाँव
- बृहत् प्रशासन शब्दावली, हिन्दी–अंग्रेजी, वैज्ञानिक तथा तकनीकी शब्दावली आयोग, नई दिल्ली–110006
- बृहत् प्रशासन शब्दावली, अंग्रेजी–हिन्दी, वैज्ञानिक तथा तकनीकी शब्दावली आयोग, नई दिल्ली–110006
- बृहत् पारिभाषिक शब्द–संग्रह, मानविकी, खंड–।।, वैज्ञानिक तथा तकनीकी शब्दावली आयोग, केन्द्रीय हिन्दी निदेशालय शिक्षा तथा समाज कल्याण मंत्रालय, भारत सरकार
- प्रयोजनमूलक अनुवाद, डॉ० सुरेश सिंहल मोनिका प्रकाशन, दिल्ली–110053
- अनुवाद सिद्धान्त एवं व्यवहार, डॉ० सुरेश सिंहल,, अभिनव प्रकाशन, दिल्ली–6

Useful Video links:

Unit No	Topics	Links
Unit-I	लिपि का मानकीकरण	https://www.youtube.com/watch?v=g1jcWLojnj4&t=2s
Unit-II	सृजनात्मक साहित्य का अर्थ	https://www.youtube.com/watch?v=aUOgArzWtTU
Unit-III	अनुवाद	https://www.youtube.com/watch?v=B1-xF-WBDXI
Unit-IV	प्रस्तुतीकरण का अर्थ	https://www.youtube.com/watch?v=NkXI3lgDkrw

Course code	**AEC-104A**				
Category	Ability Enhancement Course				
Course title	संस्कृत				
Scheme and Credits	L	T	P	**Credits**	**Semester-II**
	2	0	0	**2**	
Course Objectives	The objectives of this course are • To create awareness of the importance of language. • To develop awareness of the origin and development of a language. • To promote awareness of various language families especially Indo European language family. • To understand the general introduction to Vedic & Classical Sanskrit and their Literature.				
Assessment	15 Marks				
End Semester Examination	35 Marks				
Total Marks	50				
Duration of Exam	03 Hours				

Course Outcomes: After studying this course, the students will be able to

COs	**Skills Demonstrated**
CO1	Describe the importance of language in communication and its role in shaping human culture, society, and identity.
CO2	Explain the major branches of the Indo-European language family and their historical and geographical significance.
CO3	Analyze the key features and contributions of Vedic Sanskrit literature, and compare it with Classical Sanskrit in terms of structure, style, and content.
CO4	Distinguish between Pali, Prakrit, and Apbhransh languages, and examine their role in shaping Indian religious, cultural, and linguistic history.
CO5	Describe the evolution of Modern Indian languages, and explain the impact of Sanskrit on their vocabulary, grammar, and literary traditions.

Note: Examiner will set nine questions in total. Question one will be compulsory. Question one will have 7 parts of 1 marks each from all units and remaining 8 questions of 7 marks each to be set by taking two questions from each unit. The students have to attempt five questions in total, first being compulsory and selecting one from each unit.

Unit-I

General introduction to language

भाषा का सामान्य परिचय

i. Importance of language

भाषा का महत्व

ii. Origin and development of language

भाषा की उत्पत्ति और विकास

iii. Language families

भाषा परिवार

Unit-II

General introduction to Indo European language family
भारोपीय भाषा परिवार का सामान्य परिचय
i. Indo European language family
भारोपीय भाषा परिवार
ii. Indo-Iranian branch
भारत-ईरानी शाखा

Unit-III

General introduction to Vedic and Classical Sanskrit Languages
वैदिक तथा लौकिक संस्कृत का सामान्य परिचय
i. Vedic Sanskrit and its Literature
वैदिक संस्कृत और उसका साहित्य
ii. Classical Sanskrit and its literature
लौकिक संस्कृत और उसका साहित्य

Unit-IV

General introduction to Pali, Prakrit, Apbhransh and Modern Indian Languages
पाली, प्राकृत, अपभ्रंश और आधुनिक भारतीय भाषाओं का सामान्य परिचय
i. Pali, Prakrit and Apbhransh languages
पाली, प्राकृत और अपभ्रंश भाषाएं
ii. Modern Indian Languages
आधुनिक भारतीय भाषाएं
iii. Contribution of Sanskrit to Modern Indian Languages
संस्कृत का आधुनिक भारतीय भाषाओं को योगदान

प्रेरणास्पद पुस्तकें रू

- भाषा विज्ञान एवं भाषाशास्त्र डॉ0 कपिलदेव द्विवेदी विश्वविद्यालय प्रकाशनए वाराणसी।
- भाषाविज्ञानए डॉ0 कर्णसिंहए साहित्य भण्डारए सुभाष बाजारए मरे ठ।
- A manual of Sanskrit phonetics by C. Uhlenbeck.
- Linguistic Introduction to Sanskrit by B.K. Ghosh.
- Language, its nature, development and origin, O. Jesperso.

Useful Video links:

Unit No	Topics	Links
Unit-I	भाषा परिवार	https://www.youtube.com/watch?v=6xUd5hj9qNY
Unit-II	भारोपीय भाषा परिवार	https://www.youtube.com/watch?v=P4NAF1BDmAM
Unit-III	वैदिक संस्कृत और उसका साहित्य	https://www.youtube.com/watch?v=4Bub_2Kmvro
Unit-IV	आधुनिक भारतीय भाषाएं	https://www.youtube.com/watch?v=CfOwGijsFZ0