FACULTY OF COMPUTER SCIENCE & IT

SYLLABUS

of

Bachelor of Computer Applications (Honours)
(offered under 4-Year UG Degree Programme)

(Semester I-II)

(Under Credit Based Continuous Evaluation Grading System)

Under NEP 2020

Session: 2024-25
Batch: 2024-28

The Heritage Institution

KANYA MAHA VIDYALAYA
JALANDHAR
(Autonomous)

PROGRAMME SPECIFIC OUTCOMES

Bachelor of Computer Applications (Honours)
(Session 2024-25)

Program Specific Outcomes

PSO1: Apply skills for development of software and websites for providing efficient solution to IT based problems

PSO2: Comprehend development process in IT industry through ethical, defined and innovative techniques.

PS03: Achieve leadership role and team player role to be able to work in multidisciplinary areas at various job roles.

PSO4: Identify and demonstrate the implementation of various tools and technologies involved in the field of Information Technology.

PSO5: Demonstrate proficiency in the field of Programming, Web development and IT enabled services.

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUMOF EXAMINATIONS OF FOUR YEAR DEGREE PROGRAMME (UNDER NEP 2020)

Bachelor of Computer Applications (Honours)

Credit Based Continuous Evaluation Grading System (CBCEGS)

(Session 2024-25)

Bachelor of Computer Applications (Honours) Semester - I										
Course Code	**Course Title**	**Course Type**	**Hours per week**	**Credit**		**Marks**				**Examination Time (in Hours)**
			L-T-P	**L-T-P**	**Total**	**Total**	**Ext.**		**CA**	
							L	**P**		
BCAL-1421 / BCAL-1031/ BCAL-1431	Punjabi (Compulsory) / [1] Basic Punjabi/ [2]Punjab History and Culture	C	4-0-0	4-0-0	4	100	80	-	20	3
BCAM-1102	Communication Skills in English - I	AEC	3-0-2	3-0-1	4	100	50	30	20	3+3
BCAL-1113	Digital Electronics	DSC	4-0-0	4-0-0	4	100	80	-	20	3
BCAL-1114	Introduction to Programming – C	DSC	4-0-0	4-0-0	4	100	80	-	20	3
BCAL-1115	Introduction to Computers and Information Technology	DSC	4-0-0	4-0-0	4	100	80	-	20	3
BCAM-1116	Introduction to the Internet	SEC	2-0-2	2-0-1	3	75	40	20	15	3+3
BCAP-1117	Lab on Programming – C	DSC	0-0-4	0-0-2	2	50	-	40	10	3
BCAP-1118	Lab on Office Package	DSC	0-0-4	0-0-2	2	50	-	40	10	3
SECF-1492	*Foundation Course	VAC	2-0-0	2-0-0	2	50	40	-	10	1
	Total				29	725				

Note:

C – Compulsory, DSC – Discipline Specific Course, SEC – Skill Enhancement Course

AEC – Ability Enhancement Course, VAC – Value Added Course

[1] Special course in lieu of Punjabi (Compulsory)

[2] Special course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.

***Credits/Grades Points of these courses will not be added in total, only grades will be provided.**

Kanya Maha Vidyalaya, Jalandhar (Autonomous)

SCHEME AND CURRICULUMOF EXAMINATIONS OF FOUR YEAR DEGREE PROGRAMME
(UNDER NEP 2020)

Bachelor of Computer Applications (Honours)

Credit Based Continuous Evaluation Grading System (CBCEGS)

(Session 2024-25)

Bachelor of Computer Applications (Honours) Semester - II

Course Code	Course Title	Course Type	Hours per week	Credit		Marks				Examination Time (in Hours)
			L-T-P	L-T-P	Total	Total	Ext.		CA	
							L	P		
BCAL-2421/ BCAL-2031/ BCAL-2431	Punjabi (Compulsory) [1]Basic Punjabi [2] Punjab History and Culture	C	4-0-0	4-0-0	4	100	80	-	20	3
BCAM-2102	Communication Skills in English - II	MDC	3-0-2	3-0-1	4	100	50	30	20	3+3
BCAL-2113	Computer Architecture	DSC	4-0-0	4-0-0	4	100	80	-	20	3
BCAL-2114	Database Management System	DSC	4-0-0	4-0-0	4	100	80	-	20	3
BCAL-2115	Introduction to Object Oriented Programming-I	DSC	4-0-0	4-0-0	4	100	80	-	20	3
BCAP-2116	Lab on Database Management System	DSC	0-0-4	0-0-2	2	50	-	40	10	3
BCAP-2117	Lab on Object Oriented Programming - I	DSC	0-0-4	0-0-2	2	50	-	40	10	3
AECD-2161	*Drug Abuse: Problem, Management and Prevention (Compulsory)	VAC	2-0-0	2-0-0	2	50	40	-	10	3
	Total				26	650				

Note:

C – Compulsory, DSC – Discipline Specific Course, SEC – Skill Enhancement Course
MDC – Multi Disciplinary Course, VAC – Value Added Course

[1] Special course in lieu of Punjabi (Compulsory)

[2] Special course in lieu of Punjabi (Compulsory) for those students who are not domicile of Punjab.

*** Credits/Grades Points of these courses will not be added in total, only grades will be provided.**

Bachelor of Computer Applications (Honours) Semester – I
Session 2024-25
COURSE CODE: BCAL–1113

DIGITAL ELECTRONICS

Course Outcomes:

After the completion of this course, the student will be able to:

CO1: Comprehend and apply the number systems.

CO2: Apply K-map for simplification of Boolean expressions and implement them with Logic Gates.

CO3: Design advanced and complex combinational and sequential circuits.

CO4: Demonstrate the internal structure of semiconductor memory.

Bachelor of Computer Applications (Honours) Semester – I
Session 2024-25
COURSE CODE: BCAL–1113

DIGITAL ELECTRONICS

L-T-P: 4-0-0
Credits: 4
Examination Time: 3 Hours.

Max. Marks: 100
Theory: 80
CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Number System: Introduction to number system (Binary, Octal, Decimal, Hexadecimal and Arbitrary), number conversion system, binary arithmetic. 1's and 2's complement.

Representation of signed binary numbers, Non-weighted Codes: BCD Code, Excess-3 Code, Grey Code, ASCII, Integer and floating point representation.

UNIT- II

Logic Gates and Boolean algebra: Logic gates, Universal Gates, Boolean Algebra Laws of Boolean Algebra, canonical forms of Boolean expressions, K-Map.

UNIT-III

Combinational Circuits: Half, Full, BCD and Parallel Adder, Half and full Subtractor, Multiplexers, Demultiplexers, Multiplexer Tree, Demultiplexer Tree, Decoder, Encoder: Priority and 7-segment Display, Parity Generator and Checker.

RAM and ROM Chips, Read and Write timing diagrams, Address Selection Logic, Design of Large memory using smaller chips.

UNIT-IV

Sequential Circuits: Introduction, RS-latch, Flip-flops (Truth Table, Internal Circuit, Excitation Table), clock and Triggering, Registers: SISO, SIPO, PISO, PIPO, Counters: Up, Down, Up/Down, Ring, Twisted Ring.

References / Textbooks:

1. M. Morris Mao, Digital Design, Pearson Publication (2018), 6th Edition.
2. Ronald J. Tocci, Digital Systems, Pearson (2009), 10th Edition.
3. Morris Mano, Digital Logic and Computer Design, Pearson Education (2004), 1st Edition.
4. V.K. Jain, Arti Agarwal, Digital Electronics, Genius Publications Pvt. Ltd. (2018), 1st Edition
5. K. Meena, Principles of Digital Electronics, Prentice Hall India Learning Private Limited (2009), 1st Edition
6. William H. Gothmann, Digital Electronics: An introduction to Theory and Practice, Prentice Hall India Learning Private Limited (1982), 2nd Edition

Note: The latest editions of the books should be followed.

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAL–1114
INTRODUCTION TO PROGRAMMING – C

Course Outcome:

After passing course the student will be able to:

CO1: Comprehend the working of various programming constructs involved in C Programming.
CO2: Design C program and control its sequence using various control statements.
CO3: Apply programming concepts such as arrays, functions and strings to provide solution in different problem domains.
CO4: Work with pointers, structures and union.

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAL–1114
INTRODUCTION TO PROGRAMMING – C

L-T-P: 4-0-0
Credits: 4
Examination Time: 3 Hours

Max. Marks: 100
Theory: 80
CA: 20

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Instructions for Paper Setter -

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT-I

Fundamentals: Character set, Identifiers and Key Words, Data types, Constants, Variables, Expressions, Statements, Symbolic Constants.

Operations and Expressions: Arithmetic operators, Unary operators, Relational Operators, Logical Operators, Assignment and Conditional Operators, Library functions. Data Input and Output statements

UNIT-II

Control Statements: Preliminaries, While, Do–while and for statements, Nested loops, If–else, Switch, Break – Continue statements.

Program Structure Storage Class: Storage Classes**-** Auto, extern, register and static about library functions.

UNIT-III

Functions: Brief overview, defining, accessing functions, passing arguments to function, specifying argument data types, function prototypes, recursion.
Arrays: Defining, processing an array, passing arrays to a function, multi–dimensional arrays.
Strings: String declaration, string functions and string manipulation

UNIT-IV

Structures & Unions: Defining and processing a structure, user defined data types, structures and pointers, passing structures to functions, Unions.
Pointers: Fundamentals, pointer declaration, passing pointer to a function, pointer and one dimensional arrays, operation on pointers, pointers & multi–dimensional arrays of pointers, passing functions, other functions, more about pointer declarations.

References/Textbooks:

1. E Balagurusamy, Programming in ANSI C, Tata McGraw-Hill, 2002.
2. Byron Gottfried, Schaum's Outline Programming with C, McGraw Hill, 1996.
3. Brian W. Kernighan, Dennis M. Ritchie, The C Programming language, Prentice Hall, 1988.
4. Stephen G. Kochan, Programming in C, Pearson Education, 2015.

Note: The latest editions of the books should be followed.

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAL–1115
INTRODUCTION TO COMPUTERS AND INFORMATION TECHNOLOGY

Course Outcome:

After passing course the student will be able to:

CO1: comprehend about computer hardware, operating system concepts and various system software.

CO2: Identify various input, output and memory devices.

CO3: Apply word processing software to create professional and academic documents.

CO4: Create effective and well-formatted presentation.

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAL–1115
INTRODUCTION TO COMPUTERS AND INFORMATION TECHNOLOGY

L-T-P: 4-0-0
Credits: 4
Examination Time: 3 Hours

Max. Marks: 100
Theory: 80
CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 Marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT-I

Fundamentals of Computer: Introduction to computer, Applications of computer, Components of computers (Input unit, Output Unit, Memory Unit & CPU).

Software: Application Software, Service software, System software, booting a System.

Memories: Primary Memory -RAM (Working and Its types), ROM (Types of ROM). Secondary Memory - Hard Disk (Structure of a hard disk, working, concept of tracks, sectors, clusters, cylinders).

UNIT-II

Input Devices: Keyboards, Mouse, Joystick, Light Pen and Data Scanning devices (scanner, OCR, OMR, MICR, Bar Code Reader, Card Reader)

Output Devices: Monitor, Printers (laser printer, dot matrix printer, ink jet printer)

Word Processing: Introduction to Office, word processing & its features, Parts of window of word (Title bar, menu bar, status bar, and ruler), understanding the Ribbon, Use of Office Button and Quick Access Toolbar, Creation of new documents, opening document, insert a document into another document.

UNIT-III

Word Processing: Page setup, margins, gutters, font properties, Alignment, page breaks, header & footer, deleting, moving, replace, editing text in document, saving a document, spell checker, printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height, width of row/column. Editing, deleting Rows, columns in table. Adding picture, page colors and Watermarks, Borders, shading, Templates, wizards, drawing objects.

Presentation: Introduction to PowerPoint, Exploring menus, starting a new slide, saving presentation, moving/rearranging slides, printing slides. Applying theme to presentation, Views (slide View, slide sorter, notes view, outline view), Formatting & enhancing text formatting. Displaying slide show, adding multimedia. Slide transitions, applying Animation, Timing slide display, adding movies & sounds.

UNIT-IV

Spreadsheet: Introduction to Worksheet/Spreadsheets, creating a simple Worksheet, Computations in a Worksheet, Printing the Worksheet, Graphs, Data Sorting, Filling, Filtering data. **Functions and Formulas:** Applying Formulas. Inserting and Editing a Function, Auto Calculate and Manual Calculation, Defining Names, Using and Managing Defined Names, Displaying and Tracing Formulas, Understanding Formula Errors, Using Logical Functions (IF), Using Financial Functions (PMT), Using Database Functions (DSUM), Using Lookup Functions (VLOOKUP), User Defined and Compatibility Functions, Date & Time Functions, Math & Trig Functions, Statistical Functions, Text Functions, Logical Functions. **Working with Pivot Tables:** Creating a PivotTable, Specifying PivotTable Data, changing a PivotTable's Calculation, Filtering and Sorting a PivotTable, working with PivotTable Layout, Grouping PivotTable Items, updating a PivotTable, formatting a PivotTable, creating a PivotChart.

References/Textbooks:

1. Joyce Cox, Joan Lambert and Curtis Frye, Microsoft office Professional 2010 Step by Step, Microsoft Press, 2010.
2. V. Rajaraman, Neeharika Adabala, Fundamentals of Computers, PHI Learning, 2015.
3. P.K. Sinha, Computer Fundamentals, BPB Publications, 2004.
4. Anshuman Sharma, A book of Fundamentals of Information Technology, Lakhanpal Publishers, 5th Edition.
5. Peter Norton, Peter Norton's Computing Fundamentals, McGraw-Hill Technology Education, 2006.

Note: The latest editions of the books should be followed.

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAM–1116
INTRODUCTION TO THE INTERNET

Course Outcome:

After passing course the student will be able to:

CO1: Understand Internet basics and its working.

CO2: Gain knowledge of email service on different mail servers.

CO3: Understand different Internet protocols and search engines.

CO4: To give hands-on experience and provide a comprehensive, non-technical, hands-on overview of the Internet based services.

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAM–1116
INTRODUCTION TO THE INTERNET
(Theory)

L-T-P: 2-0-1
Credits: 3
Examination Time: 3+3 Hours

Max. Marks: 75
Theory: 40
Practical: 20
CA: 15

Instructions for Paper Setter -

Eight questions of equal marks (8 Marks each) are to be set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT I

Origin, growth and evolution of the Internet; the impact of the Internet; terminology: web pages, website, web browser, web server, bandwidth; Connect to the Internet: hardware and software, types of Internet connections, Internet Service Providers; Navigating different types of websites and online resources.

Student should explore the local market to understand the internet service providers, rates, bandwidth etc.

UNIT II

Email Communication: Email Etiquette and Best Practices, Managing and Organizing Emails Email Tools and Features, identifying spam and phishing emails

Searching on the Internet: Overview of internet resources and search engines, Basics of Using Search Engines -How search engines work, Basic search techniques and tips, Understanding search engine results pages (SERPs), Using search operators (e.g., AND, OR, NOT), Utilizing advanced search features (e.g., Google Advanced Search)

UNIT III

Online Tools for Productivity: Introduction to productivity tools (e.g., Google Workspace, Microsoft Office 365), Cloud storage and file management (e.g., Google Drive, Dropbox), Collaboration and Communication Tools: Online communication etiquette and best practices, using collaboration tools (e.g., Google Docs, Slack, Microsoft Teams), Effective virtual meeting strategies (e.g., Zoom, Google Meet)

UNIT IV

Building Online Presence: Creating and maintaining a professional online profile (e.g., LinkedIn), Personal branding and digital portfolios, Networking strategies for academic and career growth, Understanding digital footprints and online reputation.

Digital citizenship and respectful online behaviour, balancing screen time and managing digital distractions

References / Textbooks:

1. Douglas E Comer, The Internet Book: Everything You Need to Know About Computer Networking and How the Internet Works, CRC Press
2. Faithe Wempen, Digital Literacy For Dummies 1st Edition

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAM–1116
INTRODUCTION TO THE INTERNET
(Theory)

L-T-P: 2-0-1
Credits: 3
Examination Time: 3+3 Hours

Max. Marks: 75
Theory: 40
Practical: 20
CA: 15

Instructions for the examiners: -

Two questions of equal marks strictly as per the syllabus and based on the practical exercises covered in the semester. Questions may be subdivided into parts (not exceeding four). Candidates will attempt ONE question, explain their answer by writing on the answer sheet, and then implement the same on the computer. Examiner will evaluate both the answers (theory as well as practical). The viva should also be conducted alongside, and the student is asked viva questions related to the question and the solution he/she is working on during the exam.

Lab exercises based on:

- Identifying internet connections and Configuring internet connection on PC/Laptop
- Email Tools and features
- Using the Google search engine and explore Bing
- Using Google Docs, Google Drive for document preparation and storage
- Collaboration using Slack
- Analyzing LinkedIn profiles
- Creating your own LinkedIn profile
- Virtual meeting platforms: Microsoft Teams, Zoom, Google Meet

Bachelor of Computer Applications (Honours) Semester – I

(Session 2024-25)
COURSE CODE: BCAP–1117
LAB ON PROGRAMMING – C

L-T-P: 0-0-2 **Max. Marks: 50**
Credits: 2 **Practical:40**
Examination Time: 3 Hours **CA: 10**

Lab based on course code BCAL-1114

Bachelor of Computer Applications (Honours) Semester – I
(Session 2024-25)
COURSE CODE: BCAP–1118
LAB ON OFFICE PACKAGE

L-T-P: 0-0-2	**Max. Marks: 50**
Credits: 2	**Practical:40**
Examination Time: 3 Hours	**CA: 10**

Lab based on course code BCAL-1115

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAL–2113
COMPUTER ARCHITECTURE

Course Outcomes:
After passing course the student will be able to:

CO1: Comprehend various registers and its micro-operations, computer instructions and basic design of computer.

CO2: Comprehend various instruction formats and addressing modes.

CO3: Identify the hierarchy of computer memory and their organization.

CO4: Comprehend I/O organization, Pipeline and vector processing.

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAL–2113
COMPUTER ARCHITECTURE

L-T-P: 4-0-0 **Max. Marks: 100**
Credits: 4 **Theory: 80**
Examination Time: 3 Hours **CA: 20**

Instructions for Paper Setter -

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Information Representation: Register Transfer, Various Registers, Implementing Common Bus Using Multiplexers: Logical; Arithmetic & Shift Micro-operations.

Basic Computer Design Instruction Codes, Interfacing various Registers, Computer Instructions, Timing Signals, Instruction Cycle, Design of a Basic Computer.

UNIT-II

CPU Design Stack Organized CPU, Instruction Formats, Addressing Modes, Program Control, Hardwired & Micro programmed (Wile's Design) Control Unit.

UNIT-III

Memory Organization Memory Hierarchy, Designs & Concepts of Main Memory, Auxiliary Memory, Associative Memory, Cache and Virtual Memory.

UNIT-IV

I/O Organization I/O Interface, Modes of Transfer, Program Interrupt, DMA & I/O Processor.

Pipeline & Vector Processing Parallel Processing Pipelining, Parallel & Distributed Computers, SISD, SIMD& MISD, MIMD Machines, Vector Processing.

References/Textbooks:

1. Morris M. Mano, Computer System Architecture, Prentice Hall, 1992.
2. J.P. Hayes, Computer Architecture and Organization, McGraw Hill, 1998.
3. J.L. Hennessy D.A Patterson, and D. Goldberg, Computer Architecture A Quantitative Approach, Pearson Education Asia, 2006.

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAL–2114

DATABASE MANAGEMENT SYSTEM

Course Outcomes:

After passing course the student will be able to:

CO1: Understand data, database and database models.

CO2: Apply relational algebra and relational calculus for performing queries of different types.

CO3: Gain knowledge of normalization and transaction control.

CO4: Create, manage and access database using SQL and PL/SQL.

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAL–2114

DATABASE MANAGEMENT SYSTEM

L-T-P: 4-0-0
Credits: 4
Examination Time: 3 Hours

Max. Marks: 100
Theory: 80
CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

UNIT-I

Introduction: Introduction to Database, Database management system. Structure of database system, Advantages and Disadvantages, Schema, levels of database system, Relational model, Hierarchical model, Network model.

E-R diagram: Entity set, Relationship set, Attributes, Generalization, Participation, different keys used in a relational system.

UNIT-II

DBA, responsibilities of DBA, Codd's Rules, Relational Algebra: Selection, Projection, Rename, Union, Intersection, Set Difference, Cartesian Product.

Introduction to SQL, Data types, Constraints, DDL: Creating Table, Deleting Table, Alter Table (Renaming table, changing name of column, adding/dropping column, adding dropping constraint, changing type of column).

UNIT-III

DML: Insertion, Deletion and Update. Inserting multiple records, Deleting and update records having reference to another table (Cascade/Restrict/Set Null).

Querying Data: Operators, Where, Order By, Group By and having clause. Aliases, Handling NULL values, displaying distinct records, built in Functions, Aggregate Functions and Wildcards.

UNIT-IV

DCL: Creating and managing users/roles, Grant and Revoke commands.

Introduction to Normalization – need and advantages of normalization, Role of Candidate Key, INF, 2NF, 3NF, BCNF, 4NF.

Query Processing and Optimization: Steps and Components. Views in SQL.

References/Textbooks:

1. C.J. Date, An Introduction to Database Systems, Pearson Education 2000.
2. H. F. Korth&Silverschatz, A., Database System Concepts, Tata McGraw Hill, 2010.
3. Elmasri & Navathe, Fundamentals of Database Systems, Addison-Wesley, 2011.
4. Hoffer, Prescott, Mcfadden, Modern Database Management, Paperback International, 2012.
5. Martin Gruber, Understanding SQL, BPB Publication, 1994.

Note: The latest editions of the books should be followed.

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAL–2115
INTRODUCTION TO OBJECT ORIENTED PROGRAMMING-I

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

CO1: Comprehend the concepts of Object-Oriented Programming Paradigm.

CO2: Identify the use of access specifiers and different types of constructors in class.

CO3: Apply function and operator overloading.

CO4: Comprehend different types of inheritance and polymorphism.

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAL–2115
INTRODUCTION TO OBJECT ORIENTED PROGRAMMING- I

L-T-P: 4-0-0
Credits: 4
Examination Time: 3 Hours

Max. Marks: 100
Theory: 80
CA: 20

Instructions for Paper Setter -

Eight questions of equal marks (16 Marks each) are to set, two in each of the four sections (A-D). Questions of Sections A-D should be set from Units I-IV of the syllabus respectively. Questions may be divided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section

UNIT -I

Programming Paradigms: Introduction to the object oriented approach towards programming by discussing Traditional, Structured Programming methodology.
Objects & Classes: Object Definition, Instance, Encapsulation, Data Hiding, Abstraction, Inheritance, Messages, Method, Polymorphism, Classes.

UNIT -II

Object Oriented Programming using C++: Characteristics of OOP, Overview of C++, I/O using cout and cin, Objects and Classes, Member functions and data, private & public, constructor & destructor, Constructor Overloading, Types of Constructors.

UNIT -III

Function Overloading: Function Overloading, Default Arguments, Ambiguity in Function Overloading.
Operator Overloading: Overloading unary and binary operators, Type Conversion using Operator Overloading

UNIT-IV

Inheritance: Concept of inheritance, Base & derived classes, Access Specifiers, Class Hierarchies, Types of Inheritance with examples.
Virtual Functions and Polymorphism: Virtual functions, friend functions, static function, this pointer, polymorphism, Types of Polymorphism with examples, templates, class templates.

References / Textbooks:

1. HerberttSchildt, C++: The Complete Reference, Tata McGraw-Hill Education India, 4th Edition.
2. Bjarne Stroustrup, The C++ Programming Language, Addison – Wesley Professional (2013), 4th Edition

3. Bjarne Stroustrup, A Tour of C++ (C++ In-Depth Series), Addison – Wesley Professional (2018), 2nd Edition
4. G.S. Baluja, C++ Program Design (w/CD), Khanna Book Publishing Company (2015), 2nd edition.
5. Stanley Lippman, Josee Lajoie, Barbara Moo, C++ Primer, Addison-Wesley Professional (2012), 5th edition.
6. Richard Johnsonbaugh and Martin Kalin, Object Oriented Programming in C++, Pearson Education (1999), 2nd Edition

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAP–2116
LAB ON DATABASE MANAGEMENT SYSTEM

L-T-P: 0-0-2	**Max. Marks: 50**
Credits: 2	**Practical:40**
Examination Time: 3 Hours	**CA: 10**

Lab based on course code BCAL-2114

Bachelor of Computer Applications (Honours) Semester – II
(Session 2024-25)
COURSE CODE: BCAP–2117
LAB ON OBJECT ORIENTED PROGRAMMING - I

L-T-P: 0-0-2	**Max. Marks: 50**
Credits: 2	**Practical:40**
Examination Time: 3 Hours	**CA: 10**

Lab based on course code BCAL-2115