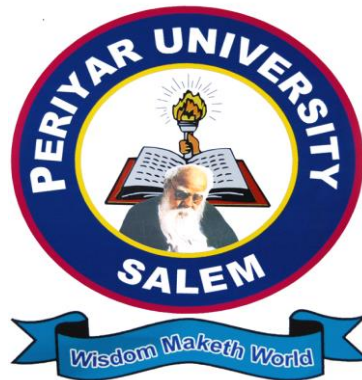# PERIYAR UNIVERSITY

PERIYAR PALKALAI NAGAR

SALEM – 636 011

DEGREE OF BACHELOR OF COMPUTER APPLICATIONS

[CHOICE BASED CREDIT SYSTEM]

SYLLABUS FOR BACHELOR OF COMPUTER APPLICATIONS

FOR THE STUDENTS ADMITTED FROM THE ACADEMIC YEAR 2017 – 2018 ONWARDS

PERIYAR UNIVERSITY, SALEM – 11

REGULATIONS FOR BACHELOR OF COMPUTER APPLICATIONS DEGREE COURSE WITH SEMESTER SYSTEM

(Effective from the academic year 2017-2018)

REGULATIONS

1. ELIGIBILITY FOR ADMISSION

A candidate who has passed in Higher Secondary Examination with Mathematics or Business Mathematics or Computer Science or Statistics (Academic stream or Vocational stream) as one of the subject under Higher Secondary Board of Examination, Tamilnadu as per norms set by the Government of Tamilnadu or an Examination accepted as equivalent there to by the syndicate, subject to such conditions as may be prescribed there to are permitted to appear and qualify for the **Bachelor of Computer Applications** degree examination of this university after a course of study of three academic years.

2. DURATION OF THE COURSE

The course shall extend over a period of three years comprising of six semesters with two semesters in one academic year. There shall not be less than 90 working days for each semester. Examination shall be conducted at the end of every semester for the respective subjects.

3. COURSE OF STUDY

The course of study shall comprise instruction in the following subjects according to the syllabus and books prescribed from time to time. The syllabus for various subjects shall be clearly demarcated into five units in each subject. Part -I, Part-II, Part – III, Part – IV and Part-V subjects are as prescribed in the scheme of examination.

4. EXAMINATIONS

The theory examination shall be three hour duration for each paper at the end of every semester. The candidate failing in any subject(s) will be permitted to appear in the subsequent examination. The practical examinations for core subjects should be conducted at the end of the every semester.

4. (a) Submission of Record Note Books for Practical Examinations

Candidates appearing for practical examinations should submit bonafide Record Note Books prescribed for practical examinations, otherwise the candidates will not be permitted to appear for the practical examinations. However, in genuine cases where the students who could not submit the record note books, they may be permitted to appear for the practical examinations, provided the concerned Head of the Department certified that the candidate has performed the experiments prescribed for the course. For such candidates zero (0) marks will be awarded for record note books.

5. REVISION OF REGULATIONS AND CURRICULUM

The University may revise/amend/ change the Regulations and Scheme of Examinations, if found necessary.

6. PASSING MINIMUM MARKS

Theory

The candidate shall be declared to have passed the examination if the candidate **secure not less than 40 marks** put together out of 100 marks (**CIA + EA).Minimum 40% should be secured (30 out of 75) in EA** of each theory subject.

Practical

The candidate shall be declared to have passed the examination if the candidate **secure not less than 40 marks** put together out of 100 marks (**CIA + EA). Minimum 40% should be secured (24 out of 60) in EA** of each Practical subject.

7. MARKS DISTRIBUTION AND QUESTION PAPER PATTERN FOR B.C.A

7.1 Theory –Marks Distribution

Maximum Marks   : 100 Marks
External [EA]   : 75 Marks
Internal [CIA]   : 25 Marks

7.1(a). Theory - Question Paper Pattern [External] (Total Marks: 75)

PART – A (10 x 2 = 20 Marks)
(Answer ALL questions),   (Two questions from each unit)

PART – B (5 x 5 = 25 Marks)
(Answer ALL questions) & (One question from each unit with Internal Choice)

PART – C (3 x 10 = 30 Marks)
(Answer ANY THREE questions) &(Open Choice – 3 out of 5 questions)

7.1(b). Theory - Internal Marks Distribution   (Total Marks: 25)

Attendance   :5 Marks
Assignment   :5 Marks
Test   :15 Marks

7.2. Practical – Marks Distribution

Maximum Marks   : 100 Marks
External [EA]   : 60 Marks
Internal [CIA]   : 40 Marks

7.2(a).Practical - External Marks Distribution   (Total Marks: 60)

For each practical question the marks should be awarded as follows **(External)**

i)	Algorithm / Flowchart	- 20%
ii)	Writing the program in the main answer book	- 30%
iii)	Test and debug the program	- 30%
iv)	Display the correct output	- 20%

(Marks may be proportionately reduced for the errors committed in each of the above)

<u>Practical Question Paper Pattern</u>

➢ **Student should attend two questions (either or pattern)**
   Note:
   (i) Practical I to Practical VI and SBEC Practical has same pattern
   (ii) Core Practical Examination must be conducted at the end of every
        Semester

7.2(b). Practical - Internal Marks Distribution (Total Marks: 40)

- Record   : 15 Marks
- Internal Practical examinations   :   25 Marks

8. COMMENCEMENT OF THIS REGULATION:

These regulations shall take effect from the academic year 2017-2018, i.e., for
students who are to be admitted to the first year of the course during the academic
year 2017-18 and thereafter.

Scheme of Examinations from the Academic Year 2017-2018
<u>Credit Distribution as per the University Norms.</u>

SEMESTER	I	II	III	IV	V	VI	Total
PART – I	3	3	-	-	-	-	6
PART – II	3	3	-	-	-	-	6
ALLIED	4	6	4	6	-	-	20
MAJOR	5	4	12	12	12	8	53
PRATICAL	4	4	4	4	4	4	24
ELECTIVE	-	-	-	-	5	10	15
SBEC	-	2	-	2	4	4	12
NMEC	-	-	2	2	-	-	4
EVS	-	2	-	-	-	-	2
VALUE EDUCATION	2	-	-	-	-	-	2
EXTENSION ACTIVITY	-	-	-	-	-	1	1
NMSDC	-	-	-	-	-	2	2
Cumulative Total Credits	**21**	**24**	**22**	**26**	**25**	**29**	**147**

SEMESTER – I

Sem	Part	Subject Code	Subject	Hrs. Lect.	Lab	Credit	CIA	EA	Total
I	I		Tamil - I	6	-	3	25	75	100
	II		English – I	6	-	3	25	75	100
	III		Computer Applications for Automation	5	-	5	25	75	100
			Practical - I : Office Automation	-	4	4	40	60	100
			Allied I : Paper – I	7	-	4	25	75	100
	IV		Value Education	2	-	2	25	75	100
			Total	**26**	**4**	**21**	**165**	**435**	**600**

SEMESTER – II

Sem	Part	Subject Code	Subject	Hrs. Lect.	Lab	Credit	CIA	EA	Total
II	I		Tamil - II	6	-	3	25	75	100
	II		English – II	6	-	3	25	75	100
	III		C Programming	4	-	4	25	75	100
			Practical – II Programming in C	-	3	4	40	60	100
			Allied I : Paper – II	4	-	3	25	75	100
			Allied I : Paper – III	4	-	3	25	75	100
	IV		**SBEC – I :** Internet and its Applications	1	1	2	25	75	100
			Environment Studies	1	-	2	25	75	100
			Total	**26**	**4**	**24**	**215**	**585**	**800**

SEMESTER – III

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
III	III		Fundamentals of Digital Computers	5	-	4	25	75	100
			Structured System Analysis and Design	5	-	4	25	75	100
			Data Structures and Algorithms	5	-	4	25	75	100
			Practical - III : Data Structures using C	-	5	4	40	60	100
			Allied II : Paper – I	5	-	4	25	75	100
			Allied II: Practical Lab – I (*)	-	3	-	-	-	-
	IV		**Tamil/ Advanced Tamil (OR) Non –Major elective NMEC – I**	2	-	2	25	75	100
			Total	**22**	**8**	**22**	**165**	**435**	**600**

SEMESTER – IV

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
IV	III		Relational Database Management Systems	5	-	4	25	75	100
			Operating System	5	-	4	25	75	100
			Object Oriented Programming with C++	4	-	4	25	75	100
			Practical – IV : Programming in C++	-	4	4	40	60	100
			Allied II: Paper – II	5	-	4	25	75	100
			Allied II : Practical Lab – I (*)	-	3	2	40	60	100
	IV		**SBEC – II :** HTML and JavaScript	1	1	2	25	75	100
			Tamil/ Advanced Tamil (OR) Non –Major elective NMEC-II	2	-	2	25	75	100
			Total	**22**	**8**	**26**	**230**	**570**	**800**

* Allied Practical Examination will be conducted at the end of even semester.

7

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
V	**III**		Web Technologies	5	-	4	25	75	100
			Problem Solving Techniques	5	-	4	25	75	100
			Java Programming	5	-	4	25	75	100
			Elective – I	5	-	5	25	75	100
			Practical – V : Programming in Java	-	5	4	40	60	100
	IV		**SBEC – III : Practical-** Image Editing Tool	-	3	2	40	60	100
			SBEC – IV Multi Skill Development	2	-	2	25	75	100
			Total	**22**	**8**	**25**	**190**	**510**	**700**

SEMESTER – VI

Sem	Part	Subject Code	Subject	Hrs.		Credit	Marks		
				Lect.	Lab		CIA	EA	Total
VI	**III**		GUI Programming	4	-	4	25	75	100
			Computer Networks	4	-	4	25	75	100
			Elective – II	5	-	5	25	75	100
			Elective – III	5	-	5	25	75	100
			Practical - VI : Programming in VB	-	5	4	40	60	100
			NMSDC – Emerging Technology for Employability – II (Machine Learning/PBL Android app Development	2	-	2	25	75	100
	IV		**SBEC – V : Practical -** Android Programming	-	3	2	40	60	100
			SBEC – VI : Shell Programming	2	-	2	25	75	100
	V		Extension Activity	-	-	1	-	-	-
			Total	**22**	**8**	**29**	**215**	**585**	**800**

ELECTIVE SUBJECTS

Elective – I

Sem.	Part	Sub. Code	Subject
V	III		E-Commerce Technologies
			System Software
			Computer Graphics

Elective – II

Sem.	Part	Sub. Code	Subjects
VI	III		Software Testing
			Parallel Processing
			Multimedia

Elective – III

Sem.	Part	Sub. Code	Subjects
VI	III		Data mining and Warehousing
			Image Processing
			Mobile Computing

SBEC – Skill Based Elective Courses

Part	Sem.	Sub. Code	Subject	Hrs. Lect.	Hrs. Lab	Credit	CIA	EA	Total
IV	II		**SBEC – I :** Internet and its Applications	1	1	2	25	75	100
	IV		**SBEC – II :** HTML and JavaScript	1	1	2	25	75	100
	V		**SBEC – III** : **Practical-** Image Editing Tool	-	3	2	40	60	100
	V		**SBEC - IV :** Multi Skill Development	2	-	2	25	75	100
	VI		**SBEC - V : Practical –** Android Programming	-	3	2	40	60	100
	VI		**SBEC-VI :** Shell Programming	2	-	2	25	75	100

Non Major Elective Course – (NMEC)

Extra Disciplinary Subjects offered by the Department of Computer Science

The department can offer any one of the subjects to the other major subject students in each semester.

Part	Sem.	Sub. Code	Subject	Lect. Hrs	Credit	CIA	EA	Total
IV	III		**NMEC I:** Basics of Computers	2	2	25	75	100
			NMEC I: System Administration and Maintenance	2	2	25	75	100
	IV		**NMEC II:** Office Automation	2	2	25	75	100
			NMEC II: Basics of Internet	2	2	25	75	100

Allied Subjects for any Degree offered by the Department of Computer Science

SYLLABUS - CBCS PATTERN
EFFECTIVE FROM THE ACADEMIC YEAR 2017-2018

All Papers should be handled and valued by Computer Science Department only. For University practical examinations both Internal and External examiners should be appointed from Computer Science Department.

FIRST OPTION (Allied Computer Science)

First Year / Second Year (Select any one of the Subject with Practical)

Part	Semester	Subject	Hours		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I /III	**Allied Paper – I** C Programming	4	-	3	25	75	100
		Allied Practical – I Programming in C	-	3	2	40	60	100
	II / IV	**Allied Paper – II** C++ Programming	4	-	3	25	75	100
		Allied Practical – II Programming in C++	-	3	2	40	60	100

SECOND OPTION (Allied Computer Science)

First Year / Second Year (Select any one of the Subject with Practical)

Part	Semester	Subject	Hours		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I / III	**Allied Paper – I** Database Systems	4	-	3	25	75	100
		Allied Practical – I MS-Access	-	3	2	40	60	100
	II / IV	**Allied Paper – II** E – Commerce Techniques	4	-	3	25	75	100
		Allied Practical – II HTML Programming	-	3	2	40	60	100

THIRD OPTION (Allied Computer Science)

First Year / Second Year (Select any one of the Subject with Practical)

Part	Semester	Subject	Hours		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I / III	**Allied Paper – I** Computer Applications in Office	4	-	3	25	75	100
		Allied Practical – I Office Automation	-	3	2	40	60	100
	II / IV	**Allied Paper – II** Image Editing Tool	4	-	3	25	75	100
		Allied Practical – II Image Editing Software	-	3	2	40	60	100

FOURTH OPTION (Allied Computer Science)

First Year / Second Year (Select any one of the Subject with Practical)

Part	Semester	Subject	Hours		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I / III	**Allied Paper – I** PHP Scripting Language	4	-	3	25	75	100
		Allied Practical – I PHP Programming	-	3	2	40	60	100
	II / IV	**Allied Paper – II** Basics of Computer and Financial Computing	4	-	3	25	75	100
		Allied Practical – II Financial Computing Software	-	3	2	40	60	100

Allied Papers for BCA offered by other Departments

ALLIED PAPERS

I - YEAR (Allied – I: First Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I	Allied I : Paper – I: Algebra and Fourier series	6	-	4	25	75	100
	II	Allied I : Paper – II: Differential Equations and Laplace Transforms	4	-	3	25	75	100
	II	Allied I : Paper – III : Practical	4	-	3	40	60	100

I -YEAR (Allied – I: Second Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I	Allied I : Paper – I: Discrete Mathematics	6	-	4	25	75	100
	II	Allied I : Paper – II: Numerical Methods	4	-	3	25	75	100
	II	Allied I : Paper – III : Graph Theory	4	-	3	25	75	100

I - Year (Allied – I: Statistics - Third Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	I	Allied I: Paper – I: **Allied Statistics –I**	6	-	4	25	75	100
	II	Allied I: Paper – II: **Allied Statistics –II**	4	-	3	25	75	100
	II	Allied I : Paper – III : **Allied Statistics –III**	4	-	3	40	60	100

II - YEAR (Allied – II: COMMERCE - FIRST Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	**III**	Allied II : Paper – I: Principles of Accounting	6	-	4	25	75	100
	IV	Allied II : Paper – II: Cost and Management Accounting	5	-	4	25	75	100
	(III &) IV	Allied II : Practical Lab -1: Allied Commerce Practical	2	-	2	40	60	100

II - YEAR (Allied – II: ELECTRONICS - SECOND Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	**III**	Allied II: Paper – I: Applied Electronics-I	6	-	4	25	75	100
	IV	Allied II : Paper – II: Applied Electronics-II	5	-	4	25	75	100
	(III &) IV	Allied II : Practical Lab -1: Allied Electronics Lab –I	2	-	2	40	60	100

II - YEAR (Allied – II: PHYSICS - Third Option)

Part	Semester	Subject	Hrs.		Credit	Marks		
			Lect.	Lab		CIA	EA	Total
III	**III**	Allied II : Paper – I: Allied Physics – I	**6**	**-**	**4**	**25**	**75**	**100**
	IV	Allied II : Paper – II: Allied physics – II	**5**	**-**	**4**	**25**	**75**	**100**
	(III &) IV	Allied II : Practical Lab -1 Allied Physics Practical	**2**	**-**	**2**	**40**	**60**	**100**

2017-18 Onwards	COMPUTER APPLICATIONS FOR AUTOMATION	BCA
I Semester		Core: Theory
Hours: 5		Credits: 5

Unit – I

Introduction to Computers: Introduction- Importance- History- Anatomy

Unit – II

MS-Word: Basics –Do's and Don'ts – Menus – Commands – Tool Bars – Icons – Word Formatting Tool Bar

Unit – III

MS-Excel: Basics – Do's and Don'ts – Menus – Commands – Tool Bars – Icons

Unit – IV

MS-PowerPoint: Basics – Menus – Tool Bars – Navigation

Unit –V

MS-Access: Introduction – Parts of an Window: - Creating a New Data Base – Table Wizard – Renaming – Saving the Database –Relationships – Query – Form – Reports – Exiting MS-Access

TEXT BOOK

1. Sanjay Saxena, "MS-Office 2000 for everyone", Vikas Publishing House Pvt. Ltd, Reprint 2006

REFERENCE BOOKS

1. Nellai Kannan, "MS-Office", Nels Publications, 3rd Edition, 2004.

2. John Walkenbach, Herb Tyson, Michael R.Groh, Faithe Wempen and Lisa A.Bucki , " Microsoft Office 2010 Bible ", Wiley India Pvt. Ltd , Reprint 2010

Word Processor

1. i) Create a document, save it and edit the document as follows:
     a. Cut, Copy, Paste options.
     b. Find and Replace options.
     c. Undo and Redo options.
   ii) Format the document:
     a. Using Bold, Underline and Italic.
     b. Change Character style and size.
     c. Formatting paragraph: Center, Left aligns & Right align
     d. Changing paragraph and line spacing, Using Bullets and Numbering in Paragraphs.
     e. Creating Hanging Paragraphs

2. Enhance the documents using Header, Footer, Page Setup, Border, Page number, watermarking, Orientation and Print Preview.

3. Insert tables and pictures in a document as follows
     a. Creating Tables in a document, Selecting Rows & Column sort the record
     b. Insert a picture – edit size and add name of the picture above it.
     c. Also do basic text formatting like – bold, italic, underline, alignments etc in table.,

4. Using mail merge, send an invitation /notice (by creating the invitation/notice) for the following situation (at least 5 addresses to be entered) (Any one of the following)
     a. For opening a new branch
     b. Inauguration function
     c. Informing about new scheme or offer

Spreadsheet

5. a. Create a worksheet, moving/ copying/ inserting/ deleting rows and columns (usage of cut, paste, commands, copying a single cell, copying a range of data, filling up a cell. Undo command, inserting a row, column, deleting rows and columns).

   b. Formatting worksheets
        Bold, Italic, Font size changing, Auto fill, date format, Currency format

6. Open an excel and create fields as follows

S.No	Name of the student	M1	M2	M3	M4	M5	Total	Avg	Result	Grade

   i. Enter S.No, Name, marks for 10 students
   ii. Find total and average using formula.
   iii. Find Result whether the student is pass or fail and also assign grade as per our university norms.
   iv. Insert a column chart showing the comparison of marks in different subjects of different students.

7. i) Creating and running a macro.
    ii) Assigning button to a defined macro.
    iii) Editing a macro.

Presentation

8. Create a presentation with apply background/Themes, apply custom animation on text, insert images/word art and animate the images with effects.

9. Create "My album" use photos, audio, and videos with necessary Transition Effects

10. Making an Organization Structure in Power Point
    Starting an organization chart, Entering names and Titles, Adding Members, Formatting the Boxes, Text and Lines, Rearranging the Org Chart, Finishing the Chart

2017-18 Onwards	**C PROGRAMMING**	BCA
II Semester		Core: Theory
Hours: 4		Credits: 4

UNIT– I

Overview of C: History of C – Importance of C – Basic structure of C programs. Constants, variables and data types: Character set – C Tokens – Keywords and identifiers – Constants – Variables – Declaration of storage classes – Assigning values to variables- Defining symbolic constants. Operators and expression – Evaluation of expressions – Precedence of arithmetic operators – Type conversions in expressions – Operator precedence and associatively – Mathematical functions. Managing input and output operations: Reading and writing a character – Formatted input and output.

UNIT– II

Decision making and branching: Simple IF, IF-ELSE, Nesting of IF-ELSE, ELSE-IF ladder, Switch statements – GOTO statements. Decision making and looping: WHILE statement – DO statement – FOR statement – Jumps in loops. Arrays: Definition & Declaration – One dimensional – Two dimensional – Multi dimensional arrays - Dynamic arrays.

UNIT – III

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – String handling functions – Table of strings. User – Defined functions: Introduction – Need for user – Defined function – A Multi- function program – Elements of user – Defined function – Definition of functions – Return values and their types – Function calls – Function declaration – All category of functions – Nesting of functions – Recursion – Passing arrays to functions – Passing strings to function.

UNIT – IV

Structures and Unions: Introduction – Defining a structure – Declaring structure variables – Accessing structure members – Structure initialization – Copying and comparing structure variables – Arrays of structures – Arrays within structures – Structures within structures – Structures and functions – Unions – Size of structures – Bit fields.

Pointers: Introduction – Understanding pointers – Accessing the address of a variable – Initializing of pointer variables. Chain of pointers – Pointer expressions –Pointers and arrays – Pointers and character strings – Arrays of pointers – Pointers as function arguments – Functions returning pointers – Pointers to functions – Pointer and structures.

UNIT – V

File Management: Introduction – Defining and opening a file –Closing a file – Input/Output operation on files – Error handling during I/O operations – Random access files – Command line arguments.

TEXT BOOK

1. E. Balgurusamy, "Programming in ANSI C", 5th Edition, Tata McGraw Hill, New Delhi, 2010.

REFERENCE BOOKS

1**.** Herbert Schildt, **"**C: The complete Reference", 4th Edition, McGraw Hill, 2003.
2. B.L.Juneja, "Programming in C", 1st Edition, Cengage Learning, 2012.

2017-18 Onwards	**Practical - II :** **PROGRAMMING IN C**	**BCA**
II Semester		**Core: Practical**
Hours: 3		**Credits: 4**

1. Write a simple C program to find the total and average percentage obtained by a student for 6 subjects.
2. Write a simple C program to check whether a given character is vowels or not using Switch – Case Statement
3. Write a simple C program to print the numbers 1 to 10 along with their squares
4. Write a simple C program to find the sum of 'n' numbers using for do-while statement
5. Write a simple C program to find the factorial of a given numbers using Function
6. Write a simple C program to swap two numbers using call by values and call by reference
7. Write a simple C program to find the smallest and largest element in an array
8. Write a simple C program to perform matrix multiplication
9. Write a simple C program to find the sum of an integer array using pointers
10. Write a C program to copy the contents of one file into another

2017-18 Onwards	**FUNDAMENTALS OF DIGITAL COMPUTERS**	BCA
III Semester		Core: Theory
Hours: 5		Credits: 4

UNIT – I

Digital Principles: Definition for digital signals – Digital waveforms – Digital logic – Moving and Storing Digital Information – Digital Operations – Digital computers – Digital Integrated Circuits. Digital Logic: The Basic Gates - NOT, OR, AND –Universal Logic Gates – NOR, NAND – AND-OR-Invert Gates – Positive and Negative Logic.

UNIT – II

Combinational Logic Circuits: Boolean Laws And Theorems – Sum-of-products Method – Truth Table to Karnaugh Map – Pairs, Quads, and Octets – Karnaugh Simplification – Don't-care Conditions – Product-of-sums Simplification. Data–Processing Circuits: 16-to-1 Multiplexer – 1-to-16 De-multiplexer – BCD-to-decimal Decoder – Decimal-to-BCD Encoder – Exclusive-or Gates – Parity Generation and Application.

UNIT - III

Number Systems and Codes: Binary Number System – Binary-to-decimal Conversion – Decimal-to-binary Conversion – Octal Numbers – Hexadecimal Numbers – The ASCII Code – The Excess-3 Code – The Gray Code. Arithmetic Circuits: Binary Addition –Binary Subtraction –Unsigned Binary Numbers – Sign-magnitude Numbers - 2'S Complement Representation - 2'S Compliment Arithmetic.

UNIT - IV

Arithmetic Circuits: Arithmetic Building Blocks – The Adder - subtractor – Fast Adder – Arithmetic Logic Unit – Binary Multiplication and Division. Clocks and Timing Circuits: Clock Waveforms. Flip-Flops: RS Flip-flops – Edge-triggered D Flip-flops - Edge triggered JK Flip-flops – JK Master-slave Flip-flops.

UNIT - V

Registers: Serial-In Serial-Out – Serial-In Parallel-Out – Parallel-In Serial-Out – Parallel-In Parallel-Out (54/74174). Memory: Introduction - Magnetic Memory - Optical Memory - Memory Addressing - ROMs, PROMs, EPROMs and EEPROM – RAMs-7489. A Simple Computer Design.

TEXT BOOK

1. Donald P Leach, Albert Paul Malvino and Goutam Saha, "Digital Principles and Applications," 8th Edition, TMH, 2006.

REFERENCES

1. Morris Mano, "Digital Logic and Computer Design," 4th Edition, Pearson, 2008

2. Thomas C Bartee, "Digital Computer Fundamentals," sixth edition, McGraw-Hill, 1985

3. Pradeep K. Sinha, Priti Sinha, "Computer Fundamentals," Sixth Edition, BPB Publications, 2007

2017-18 Onwards	STRUCTURED SYSTEM ANALYSIS AND DESIGN	BCA
III Semester		Core: Theory
Hours: 5		Credits: 4

UNIT-I

System Concepts & Information System Environment: System concepts – definition, characteristics of a system, Elements of a system, Types of a System, introduction to system Analysis and Design – system Analysis, System Design, System Development Life Cycle.

UNIT-II

The Information System Analysis: Introduction – where does the system analysis come from? – What does it do? – Preparing for Career as a Analyst – general Business Knowledge – Technical Skills – Communication skills – Role of System Analyst – Change Agent – Investigator – and Minor – Psychologist, Sales Person, Motivator, Politician, Place of the System analyst position in the MIS organization.

UNIT-III

System Analysis: Problem who System Development Life Cycle approach, Neet for a Structured approach, Information Gathering. A problem solving approach – Data Flow Diagrams, Data modeling with logical entity relationship. Process modeling with logical data diagram, Data dictionary, Decision tree, Decision tables and Structured English.

UNIT-IV

System Design : Introduction , The Process of Logical & Physical design – Modern Computer Databases – Different kinds of databases – E.R.models – E-R diagrams – Normalization. Computer outputs and controls, computer inputs and controls, Code design , Computer based methods. Procedures and controls.

UNIT-V

System Implementation : System testing Conversion Compating resistance to change Post Implementation review Software maintenance Hardware/ Software Selection Security disaster/ recovery and ethics in System development . Case Analysis.

TEXT BOOK
1. Elias M.Awad, "System Analysis and Design", 2nd Revised edition, 1985.

REFERENCE BOOKS
1. Jerry L.Whitten . Lonnie D.Bently & Victor M.Bar "System Analysis and Design",2007
2. Robert J Thierauf, "System Analysis and Design – A Case study approach", 1986
3. Henry F.Korth , Abraham Silberchatz & Sudharsan, "Data base System Concepts", Sixth Edition, 2010.

2017-18 Onwards	DATA STRUCTURES AND ALGORITHMS	BCA
III Semester		Core: Theory
Hours: 5		Credits: 4

UNIT -I

Algorithms: Problem solving – Top-Down and Bottom- up approaches to algorithm design – Use of algorithms in problem solving – Design, Implementation, Verification of algorithm – Efficiency analysis of algorithms: Space, Time complexity, and Frequency count – Sample algorithms: Exchange the value of two variables – Summation of set of numbers – Decimal to Binary conversion – Sorting – Factorial – Fibonacci – Finding a largest Number in an array - Reverse the order of elements in array.

UNIT- II

Data structure: Introduction - Definitions – concepts – Overview – Implementation of Data Structures. Arrays: Definition – Terminology - One dimensional array – Multi Dimensional Array. Stacks: Introduction – Definition – Representation of stacks – Operations on stacks – Applications of stack: Evaluation of Arithmetic Expression- Implementation of Recursion- Factorial Calculation

UNIT -III

Queues: Introduction – Definition – Representation of Queues –Various Queue structures: Circular Queue – De-queue – Priority Queue – Applications of Queues. Linked List: Definition -Single Linked List - Double Linked List - Circular Double Linked List – Applications.

UNIT- IV

Trees: Terminologies – Definitions &Concepts – Representation of Binary tree – Operations on Binary Tree – Types of Binary Trees: Expression Tree – Binary Search Tree – Heap Tree – Red Black Tree. Graphs: Introduction – Graph terminologies – Representation of Graphs – Operations on Graphs – Application of Graph: Shortest path problem – Topological sorting – Minimum Spanning Trees.

UNIT- V

Searching: Terminologies – Linear Search techniques with – Array, Linked List, Ordered List, Binary search. Non Linear Search: Binary Tree Searching – Binary Search Tree Searching. Sorting:

Terminologies – Sorting Techniques – Insertion Sort - Selection sort – Bubble sort – Quick sort – Merge sort –Heap sort.

TEXT BOOKS

1. Sathish Jain, Shashi Singh, "Data Structure Made Simple", First Edition, BPB Publications, New Delhi, 2006. (Unit - 1)

2. Debasis Samanta, "Classic Data Structures", second Edition, PHI Learning, New Delhi, July 2009.(Unit 2 - 5)

REFERENCE BOOKS

1. ApritaGopal, "Magnifying Data Structures", First Edition, PHI Learning, New Delhi, 2010.
2. Horowitz, Sahni, Anderson-Freed,"Data Structures in C", Universities Press, 2007.

2017-18 Onwards	PRACTICAL – III :	BCA
III Semester	**DATA STRUCTURES**	**Core: Practical**
Hours: 5	**USING C**	**Credits: 4**

1. Implement Push and Pop Operations of a Stack using Array

2. Write a program to perform factorial calculation using recursion.

3. Implement Add and Delete Operations on Queue using Pointer

4. Implement Add and Delete Operations on Circular Queue

5. Write a Program to convert an Infix Expression to Postfix Expression using Arrays.

6. Write a Program to add Two Polynomials using Pointers.

7. Perform Tree Traversals for a Binary Tree using Recursion.

8. Write a program to perform Binary Search.

9. Sort the given list of numbers using Heap Sort.

10. Sort the given list of numbers using Quick Sort

2017-18 Onwards	**RELATIONAL DATABASE MANAGEMENT SYSTEMS**	BCA
IV Semester		**Core: Theory**
Hours: 5		**Credits: 4**

UNIT – I

Introduction: Database System Applications – DBMS Vs. File System - View of Data –Data Model - Database Languages – Database users and Administrators - Transaction Management – Database System Structure – Application Architecture; Data Models: Basic Concepts – Constraint- Keys- ER Diagram – Weak Entity – Extended ER Features - Design of an ER Schema – UML; Relational Model: Structure of Relational Databases – Relational Algebra – Views.

UNIT – II

SQL: Background – Basic Structure – Set Operation – Aggregate Function – Null Values – Nested Sub Queries – Views – Modification of the Database – Data Definition Language – Embedded SQL – Dynamic SQL.

UNIT-III

Advance SQL : Integrity and Security**:** Domain – Constraint – Referential Integrity – assertions – Triggers – Security and Authorization – Authorization in SQL – Encryption and Authentication.

UNIT – IV

Relational Database Design: First Normal Form - Pitfalls in Relational Database Design – Functional Dependencies (Second Normal Form) – Boyce-Codd Normal Form - Third Normal Form – Fourth Normal Form – Overall Database Design Process.

UNIT-V

Transaction Management: Transaction concepts - States – Serializability. Lock based concurrency control: Locks – Granting – Two-Phase Locking protocol. Time stamp based protocol: Timestamps – Timestamp ordering protocol – Dead lock handling.

TEXT BOOK:

1. A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts", Fifth Edition McGraw-Hill, 2005

REFERENCE BOOKS

1. Alexis Leon & Mathews Leon, "Essential of DBMS", 2nd reprint, Vijay Nicole Publications, 2009.

2. Alexis Leon & Mathews Leon, "Fundamentals of DBMS", 2nd Edition, Vijay Nicole Publications, 2014.

2017-18 Onwards	**OPERATING SYSTEM**	BCA
IV Semester		Core: Theory
Hours: 5		Credits: 4

UNIT – I

Introduction – History of operating system- Different kinds of operating system – Operation system concepts - System calls-Operating system structure.

UNIT – II

Processes and Threads: Processes – threads – thread model and usage – inter process communication.

UNIT – III

Scheduling - Memory Management: Memory Abstraction – Virtual Memory - page replacement algorithms.

UNIT – IV

Deadlocks: Resources- introduction to deadlocks – deadlock detection and recovery – deadlocks avoidance – deadlock prevention. Multiple processor system: multiprocessors – multi computers.

UNIT – V

Input/Output: principles of I/O hardware - principles of I/O software. Files systems: Files – directories - files systems implementation – File System Management and Optimization.

TEXT BOOK

1. Andrew S. Tanenbaum, "Modern Operating Systems", 2nd Edition, PHI private Limited, New Delhi, 2008.

REFERENCE BOOKS

1. William Stallings, "Operating Systems – Internals & Design Principles", 5th Edition, Prentice – Hall of India private Ltd, New Delhi, 2004.

2. Sridhar Vaidyanathan, "Operating System", 1st Edition,Vijay Nicole Publications, 2014.

2017-18 Onwards	**OBJECT ORIENTED PROGRAMMING WITH C++**	BCA
IV Semester		**Core: Theory**
Hours: 4		**Credits: 4**

UNIT – I

Object-Oriented Programming: Principles – Benefits of OOP – Application of OOP – Tokens, Expression and Control Structures: Tokens – Keywords – Identifiers and Constants – Data types – Constants – Variables – Operators – Manipulators – Expressions – Control Structure.

UNIT – II

Functions – Prototyping – Call by Reference – Return by Reference – Inline Functions – Default Arguments – const Arguments – Function Overloading – Friend and Virtual Functions, Classes and Objects – Class – Member Functions – Arrays with in a Class – Memory Allocation for Objects – Static data members – Static member functions – Arrays of Objects – Objects as Function Arguments – Friendly Functions – Returning Objects – const Member Functions – Pointers to Members, Constructors and Destructors.

UNIT – III

Operator Overloading and Type Conversions, Inheritance: Extending Classes – Derived Classes – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance – Virtual Base Classes – Abstract Classes, Pointers, Virtual Functions and Polymorphism: Pointers – Pointers to Objects –this Pointer – Pointers to Derived Classes – Virtual Functions – Pure Virtual Functions

UNIT – IV

Managing I/O Operations: C++ Streams – C++ Stream Classes – Unformatted I/O and Formatted I/O Operations – Managing Output with Manipulators, Working with Files: Classes for File Stream Operations – Opening and Closing a File – Detecting end-of-file – File Pointers and Their Manipulators – Sequential I/O Operations – Updating a File – Error Handling during File Operations – Command Line Arguments

UNIT – V:

Templates: Class Templates – Class Templates with Multiple Parameters – Function Templates – Function Templates with Multiple Parameters – Overloading of Template Functions – Member Function Templates – Non-Type Template Arguments, Exception Handling: Basics - Exception Handling Mechanism – Throwing Mechanism – Catching Mechanism – Re-throwing an Exception – Specifying Exceptions

TEXT BOOK

1. E.Balagurusamy, "Object Oriented Programming with C++", 5th Edition, Tata McGraw Hill Publications, 2011.

REFERENCE BOOKS

1. M. T. Somashekara, "Object Oriented programming with C++", 2nd Edition, Prentice Hall of India Learning Limited, 2012.
2. Behrouz A.Forouzan, "A Structured Approach Using C++", 2nd Edition, Cengage Learning, 2003.

2017-18 Onwards	PRACTICAL – IV : PROGRAMMING IN C++	BCA
IV Semester		Core: Practical
Hours: 4		Credits: 4

1. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write member functions ADD( ), SUB( ), MUL( ), DIV( ) to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.

2. Write a C++ Program to create a class that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.

3. Write a C++ Program to create a class for STRING. Write a Member Function to initialize, get and display stings. Overload the operators ++ and == to concatenate two Strings and to compare two strings respectively.

4. Write a C++ Program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.

5. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGE from class Shape and Calculate Area and Perimeter of each class separately and display the result.

6. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.

7. Write a C++ Program to Convert an Infix Expression to Postfix Expression using Arrays.

8. Write a C++ Program to create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element. Check for overflow and underflow conditions.

9. Write a C++ Program to check whether the given string is a palindrome or not using Pointers.

10. Write a C++ Program to merge two files into a single file.

2017-18 Onwards	**WEB TECHNOLOGIES**	BCA
V Semester		**Core: Theory**
Hours: 5		**Credits: 4**

UNIT – I

Introducing PHP – Basic development Concepts – Creating first PHP Scripts – Using Variable and Operators – Storing Data in variable – Understanding Data types – Setting and Checking variables Data types – Using Constants – Manipulating Variables with Operators.

UNIT – II

Controlling Program Flow: Writing Simple Conditional Statements - Writing More Complex Conditional Statements – Repeating Action with Loops – Working with String and Numeric Functions.

UNIT – III

Working with Arrays: Storing Data in Arrays – Processing Arrays with Loops and Iterations – Using Arrays with Forms - Working with Array Functions – Working with Dates and Times.

UNIT – IV

Using Functions and Classes: Creating User-Defined Functions - Creating Classes – Using Advanced OOP Concepts. Working with Files and Directories: Reading Files-Writing Files-Processing Directories.

UNIT – V

Working with Database and SQL : Introducing Database and SQL- Using MySQL-Adding and modifying Data-Handling Errors – Using SQLite Extension and PDO Extension. Introduction XML—Simple XML and DOM Extension.

TEXT BOOK:
1. Vikram VASWANI, "PHP A Beginner's Guide ", Tata McGraw-Hill, 2008.

REFERENCE BOOKS:
1. Steven Holzner – "The PHP Complete Reference" –Tata McGraw-Hill, 2007.
2. Steven Holzer "Spring into PHP5" – Tata McGraw Hill Edition, 2011.

2017-18 Onwards	**PROBLEM SOLVING TECHNIQUES**	BCA
V Semester		**Core: Theory**
Hours: 5		**Credits: 4**

UNIT I

Introduction To Computer Problem-Solving: Introduction - The Problem-solving Aspect - Top-down Design-implementation of Algorithms- Program Verification - The Efficiency of Algorithms.

UNIT-II

Analysis of Algorithm: Fundamental Algorithms - Exchanging the values of Two Variables - Counting - Summation of a set of Numbers - Factorial Computation-Sine function computation - Generation of the Fibonacci sequence - Reversing the Digits of an Integer - Base Conversion Character to Number Conversion.

UNIT III

Factoring Methods: Finding The Square Root Of A Number - The Greatest Common Divisor Of Two Integers - Generating Prime Numbers - Generation of Pseudo - random Numbers - Raising a Number to a Large Power.

UNIT IV

Array Techniques: Array Order Reversal-Array Counting or Histogramming - Finding the Maximum Number in a Set - Removal of Duplicates from an Ordered Array - Partitioning an Array – Finding the kth Smallest Element.

UNIT V

Merging, Sorting and Searching: Two ways merge - sorting by selection, insertion, diminishing increment and partitioning –Binary search.

Text Book
1. R.G.Dromey "How to Solve it by Computer", Pearson Education, India, 2011.

Reference Book
1. Sey mour Lipschutz, "Essentials Computer Mathematics", Schaums outlines series, Tata McGrawHill Edition, 2004.

2017-18 Onwards		JAVA PROGRAMMING	BCA
V Semester			Core: Theory
Hours: 5			Credits: 4

UNIT – I

Java Evolution – Simple Java Program – Java program structure – Java Tokens – Java Statements – JVM – Command Line Arguments – Constants, Variables, and Data Types – Operators and Expressions.

UNIT – II

Decision Making and Branching: Introduction – Decision Making with if Statement – Simple if Statement – The if…else Statement – Nesting of if…else Statement – The else if Ladder – The Switch Statement – The ?: Operator. Decision Making and Looping: Introduction – The While Statement – The Do Statement – The For Statement – Jumps in Loops – Labelled Loops. Classes, Objects and Methods: Introduction – Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Methods – Abstract Methods and Classes – Methods with Varargs – Visibility Control.

UNIT – III

Arrays, Strings and Vectors: Introduction – One-dimensional Arrays – Creating an Array – Two-dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types – Annotations. Interfaces: Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables – Packages: Introduction – Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – Hiding Classes – Static Import.

UNIT – IV

Multithreaded Programming: Introduction – Creating Threads – Extending the Thread class – Stopping and Blocking a Thread - Life cycle of a Thread – Using Thread methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the Runnable interface – Inter-thread Communication. Managing Errors and Exceptions: Introduction – Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing Our Own Exceptions. Applet Programming: Introduction – Difference Between Applets and Applications – Write Applets - Building Applet code - Applet life cycle - Creating an Executable Applet – Designing a web page – Applet Tag – Adding Applet to HTML File

– Running the applet – Applet Tags –Passing Parameters to Applets – Aligning the Display – Displaying Numerical values – Getting input from the user – Event handling.

UNIT – V

Graphics Programming: Introduction – The Graphics Class - Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing polygons – Line Graphs – Using Control Loops in Applets – Drawing Bar Charts. Managing I/O Files in Java: Introduction – Concept of stream – Stream classes – Byte stream classes – Character stream classes – Using stream – Using the file class – Creation of Files – Reading/Writing characters – Reading/Writing Bytes – Handling Primitive Data types – Concatenating and buffering Bytes - Random access files.

TEXT BOOK

1. E. Balagurusamy, ''Programming with Java,'' 4th Edition, Tata McGraw Hill Pub. Ltd., New Delhi,2009.

REFERENCE BOOKS

1. Herbert Schild, "Java: The Complete Reference," Ninth Edition, Oracle Press, 2014
2. Rohit Khurana, "Programming with JAVA," VIKAS Pub., 2014

1. Write a program to find the Area of Square, Rectangle and Circle using Method Overloading.

2. Write a program to sort the given list of names.

3. Write a program to multiply the given two matrices.

4. Write a program to design a class to represent a bank account. Include the following:

    Data Members: Name of the depositor, Account number, Type of account, and Balance amount in the account.

    Methods: To assign initial values, To deposit an amount, To withdraw an amount after checking balance, and To display the name and balance.

5. Write a program that import the user defined package and access the Member variable of classes that contained by Package.

6. Write a program to handle the Exception using try and multiple catch blocks.

7. Write a program to illustrate the use of multithreads.

8. Write a program to create student registration form using applet with Name, Address, Sex, Class, Email-id.

9. Write a program to draw the line, rectangle, oval, text using the graphics method..

10. Write a program to create a sequential file that could store details about five products. Details include product code, cost, and number of items available and are provided through the keyboard. Compute and print the total value of all the five products.

2017-18 Onwards		BCA
VI Semester	**GUI PROGRAMMING**	Core: Theory
Hours: 5		Credits: 4

UNIT – I

Introduction to Visual Basic: Programming Languages, Procedural, Object Oriented and Event Driven, Writing VB Projects, VB Environment, Writing First Project-Finding and Fixing Errors – VB Help. Controls in VB – Coding for Controls.

UNIT – II

Variables, Constants and Calculations: Data Types-Variables and Constants – Val function – Arithmetic operations – Formatting data. Decisions and conditions: If Statements – Conditions – nested If Statements – Using If Statement with option buttons and checkboxes – displaying messages – Input validation – Calling event Procedures.

UNIT – III

Menus, Sub procedures and sub functions: Menus – Common Dialog Boxes – Writing General Procedures. Multiple Forms: Multiple Forms – Standard Code Modules-Variables and Constants in Multiple-Form Projects.

UNIT – IV

List Boxes and Combo boxes - Do/Loop – For/Next Loop – Using Msg box Function – Using String Function. Arrays: Control Arrays – Single Dimension Array – For Each/Next Statements – User defined data types – Multidimensional Arrays.

UNIT – V

Accessing Database Files: Visual basic and Database Files – Using Data Control – Viewing a Database File – Navigating the Database in Code – Using List Boxes and Combo boxes as Data-Bound Controls.

TEXT BOOK:

1. Julia Case Bradley and Anita C. Millspaugh, "Programming in Visual Basic 6.0", Tata McGraw-Hill Edition, 2011.

REFERENCE BOOKS:

1. Gary Cornell, "Visual Basic 6 from the Ground up", McGraw-Hill Education,1998
2. Mohammed Azam, "Programming with Visual Basic 6.0", 1st Edition, Vikas Publishing House Pvt. Ltd., Chennai, 2001.

2017-18 Onwards	**COMPUTER NETWORKS**	BCA
VI Semester		Core: Theory
Hours: 5		Credits: 4

UNIT – I

Introduction - Network Hardware – Network Software - Reference Models: OSI Reference model. Physical Layer: Guided Transmission media- Wireless Transmission - Public Switched Telephone Network- The Mobile Telephone System.

UNIT – II

Data Link Layer: Data Link Layer Design Issues - Error Detection and Correction – Elementary protocols - Sliding Window Protocols – MAC sub layer: Channel allocation problem –Multiple access protocols.

UNIT – III

Network Layer: Network Layer Design Issues- Routing Algorithms- Congestion control algorithm - Quality of Service –Internetworking.

UNIT - IV

Transport Layer: Transport Services – Elements of transport protocols – Congestion control – Internet transport protocol - UDP – TCP.

UNIT – V

Application layers: Domain name system – Electric mail – The World Wide Web.Network Security: Cryptography – Symmetric, Public key algorithms.

TEXT BOOK
1. David J.Wetherall, Andrew S.Tanenbaum, "Computer Networks", 5th Edition, Pearson Education, 2012.

REFERENCE BOOKS
1. B.A. Forouzan, "Data Communication and Networking", 4th Edition, Tata McGraw Hill, 2007.
2. B.A. Forouzan, Firouz Mosharraf, "Computer Networks – A Top down Approach", Tata McGraw Hill, 2012.
3. A.Leon & M.Leon, "Introduction to Information Technology", 1st Edition, Vijay Nicole Publications, 2013.

2017-18 Onwards	**PRACTICAL – VI:** **PROGRAMMING IN VB**	BCA
VI Semester		**Core: Practical**
Hours: 5		**Credits: 4**

1. Construction of an Arithmetic Calculator (Simple)

2. Writing simple programs using loops and decision making statements.

    a. Generate Fibonacci series.

    b. Find the sum of N numbers.

    c. To display the numbers/symbols in triangle format.

3. Write a program to create a menu and MDI Forms.

4. Write a program to create a simple input screen with four basic controls to read input and write it to a file.

5. Write a program to display files in a directory using DriveListBox, DirListBox and FileListBox control and open, edit and save text file using Rich text box control

6. Write a program to illustrate Common Dialog Control and to open, edit and save text file

7. Write a program to develop windows based installation file with Student Registration form and Login form using database access.

8. Develop a Program to Insert, update, delete a Record in database using ADO

9. Write a Program to implement Personal Information System using MDI and Standard ADODC controls and reports.

10. Write a program to implement animation using timers.

2017-18 Onwards	Elective – I :	BCA
V Semester	E-COMMERCE	Elective: Theory
Hours: 5	TECHNOLOGIES	Credits: 5

UNIT I

History of E-commerce and Indian Business Context: E-Commerce –Emergence of the Internet – Emergence of the WWW – Advantages of E-Commerce – Transition to E-Commerce in India – The Internet and India – E-transition Challenges for Indian Corporate. Business Models for E-commerce: Business Model – E-business Models Based on the Relationship of Transaction Parties - E-business Models Based on the Relationship of Transaction Types.

UNIT II

Enabling Technologies of the World Wide Web: World Wide Web – Internet Client-Server Applications – Networks and Internets – Software Agents – Internet Standards and Specifications – ISP. e-Marketing : Traditional Marketing – Identifying Web Presence Goals – Online Marketing – E-advertising – E-branding.

UNIT III

E-Security: Information system Security – Security on the Internet – E-business Risk Management Issues – Information Security Environment in India. Legal and Ethical Issues : Cyberstalking – Privacy is at Risk in the Internet Age – Phishing – Application Fraud – Skimming – Copyright – Internet Gambling – Threats to Children.

UNIT IV

e-Payment Systems: Main Concerns in Internet Banking – Digital Payment Requirements – Digital Token-based e-payment Systems – Classification of New Payment Systems – Properties of Electronic Cash – Cheque Payment Systems on the Internet – Risk and e-Payment Systems – Designing e-payment Systems – Digital Signature – Online Financial Services in India - Online Stock Trading.

UNIT V

Information systems for Mobile Commerce: What is Mobile Commerce? – Wireless Applications – Cellular Network – Wireless Spectrum – Technologies for Mobile Commerce – Wireless Technologies – Different Generations in Wireless Communication – Security Issues Pertaining to Cellular Technology. Portals for E-Business: Portals – Human Resource Management – Various HRIS Modules.

TEXT BOOK
1. P.T.Joseph, S.J., "E-Commerce - An Indian Perspective", 4th Edition, PHI 2012.

REFERENCE BOOK

1. David Whiteley , "E-Commerce Strategy, Technologies and Applications", Tata Mc-Graw-Hill, 2001

2017-18 Onwards	ELECTIVE – I : SYSTEM SOFTWARE	BCA
V Semester		Elective: Theory
Hours: 5		Credits: 5

UNIT-I

System software and machine architecture – The Simplified Instructional Computer (SIC) - Machine architecture - Data and instruction formats - addressing modes - instruction sets - I/O and programming.

UNIT-II

Basic assembler functions - A simple SIC assembler – Assembler algorithm and data structures - Machine dependent assembler features - Instruction formats and addressing modes – Program relocation - Machine independent assembler features - Literals – Symbol-defining statements – Expressions - One pass assemblers and Multi pass assemblers .

UNIT-III

Basic loader functions - Design of an Absolute Loader – A Simple Bootstrap Loader - Machine dependent loader features - Relocation – Program Linking – Algorithm and Data Structures for Linking Loader - Machine-independent loader features - Automatic Library Search – Loader Options - Loader design options - Linkage Editors – Dynamic Linking – Bootstrap Loaders .

UNIT-IV

Basic macro processor functions - Macro Definition and Expansion – Macro Processor Algorithm and data structures - Machine-independent macro processor features - Concatenation of Macro Parameters – Generation of Unique Labels – Conditional Macro Expansion – Keyword Macro Parameters-Macro within Macro.

UNIT-V

Text editors - Overview of the Editing Process - User Interface – Editor Structure. - Interactive debugging systems - Debugging functions and capabilities – Relationship with other parts of the system – User-Interface Criteria.

TEXT BOOK

1. Leland L. Beck, "System Software – An Introduction to Systems Programming", Pearson Education Asia, 2005.

REFERENCE BOOKS

1.D. M. Dhamdhere, "Systems Programming and Operating Systems", Second Revised Edition,TataMcGraw-Hill,1999.

2. John J. Donovan "Systems Programming", Tata McGraw-Hill Edition, 1972.

2017-18 Onwards	Elective – I :	BCA
V Semester	**COMPUTER GRAPHICS**	Elective : Theory
Hours: 5		Credits: 5

UNIT – I

Overview of graphics Systems: - Video Display Device – Refresh Cathode-Ray tupes -Raster Scan Displays - Random Scan Displays – Color CRT Monitors –Direct view Storage tupes Flat – Panel Displays – Three Dimensional Viewing Devices . Stereoscopic and Virtual – Reality Systems.

UNIT – II

Raster – Scan Systems Video Controller – Random – Scan Systems Video Controller – Random-Scan Systems – Input device – Keyboard Mouse – Trackball and Space ball . Joysticks – Data Glove – Digitizers- Image Scanners – Touch Panels – Light pens. Voice Systems – Hard-Copy Devices – Line Drawing Algorithms DDA Algorithms – Circle generating Algorithm Properties of Ellipses.

UNIT – III

Two Dimensional Geometric Transformation : - Basic Transformations - Translation – Rotation – Scaling – Matrix Representations and Homogeneous Coordinates – Other Transformations Reflections Two Dimensional Viewing : Windows to view point coordinate Transformations – Clipping Operations – Point Clipping – Line Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

UNIT – IV

Three Dimensional Concepts: Three Dimensional Display method – Parallel projection – Depth cueing visible line and surface – Three Dimensional Geometric and modeling Transformations: Translation – Rotation - Scaling – Composite Transformations. Three Dimensional Viewing: - Viewing pipeline – Viewing Coordinates – Projections – Parallel Projections – Perspective Projections.

UNIT – V

Visible Surface detection Methods : Visible Surface Detection Methods : Classification Visible Surface Detection Algorithms – Back Face Detection – Depth – Buffer Method – A-Buffer Method – Scan line method – Depth sorting method – BSP tree method – Area Subdivision Method.

TEXT BOOK:

1. Donald Hearn & M.Pauline Baker , "Computer Graphics",2nd Edition, 1996

REFERENCE BOOK:

1. John F. Hughes, Andries Van Dam, Morgan Mcguire, David F. Sklar, James D. Foley, Steven K. Feiner, Kurt Akeley, "Computer Graphics Principles and Practice" 3rd Edition, 2014 Pearson Education, Inc.

2017-18 Onwards	Elective – II : SOFTWARE TESTING	BCA
VI Semester		Elective: Theory
Hours: 5		Credits: 5

UNIT-I

Building a Software Testing Strategy – Software Testing Design Techniques – Software Testing Tools and Selection of Test Automation Products – Software Testing Lifecycle and Software Testing Process.

UNIT-II

Testing Effort Estimation and Test Planning – Software Test Effort Estimation Technique – Pre-Development Testing: Requirements and Design Phase – Best Practices in Program Phase: Unit, System and Integration Testing.

UNIT-III

A Case Study on Acceptance Testing, Implementing an Effective Test Management Process – Building an Effective Test Organization – Performance Issues and Optimization Techniques.

UNIT-IV

Choosing a Load Testing Strategy – Dodging the Bullets – Validating Mission-Critical Server Software for Reliability – Probing the Blind Spot – Testing in Today's Business and Usability.

UNIT-V

Testing of web-based Application – Testing of Embedded Software System used in Aerospace Applications – Testing Applications for Security – Testing Metrics, Best Practices and Benchmarks.

TEXT BOOK

1. Renu Rajani and Pradeep Oak, "Software Testing: Effective Methods, Tools and Techniques" Tata McGraw-Hill, 2007.

REFERENCE BOOKS

1. M.C. Limaye, "Software Testing Principles Techniques and Tools", McGraw-Hill Education India Pvt. Ltd - New Delhi, 2009

2. Erik P.W.M. Veenendaal and Graham Bath, "Improving the Test Process", Rocky Nook, 2013

2017-18 Onwards	Elective – II :	BCA
VI Semester	PARALLEL PROCESSING	Elective: Theory
Hours: 5		Credits: 5

UNIT -I

Parallel Computer Models: The State of Computing - Computer development milestones-Elements of modern computers-Evolution of computer architecture- System attributes to performance. Multiprocessors and Multicomputer: shared-memory and multiprocessors-Distributed-memory multicomputer- A Taxonomy of MIMD computers. Multi-vector and SIMD Computers: Vector super computers-SIMD super computers. PRAM and VLSI Models: Parallel Random-access machines-VLSI complexity model. Architectural Development Tracks: Multiple-processor tracks- Multi-vector and SIMD tracks.

UNIT-II

Program and Network Properties: Conditions of Parallelism - Data and resource dependences- Hardware and software parallelism-The role of compilers. Program Partitioning and Scheduling: Grain sizes and latency-Grain packing and scheduling-Static multiprocessor scheduling- Program Flow Mechanisms: Control flow versus data flow-Demand-driven mechanisms- System Interconnect Architectures: Network properties and routing- Static connection networks- Dynamic connection networks.

UNIT -III

Principles Of Scalable Performance: Performance Metrics and Measures - Parallelism profile in programs-Harmonic mean performance-Efficiency, utilization, and quality-Standard performance measures. Parallel Processing Applications: Massive parallelism for grand challenges-Application models of parallel computers. Speedup Performance Laws: Amdahl's law for a fixed workload. Scalability Analysis and Approaches: Scalability metrics and goals-Evolution of scalable computers.

UNIT -IV

Processors and Memory Hierarchy: Advanced Processor Technology - Design space of processors – Instruction set architectures. Superscalar and Vector Processors: Superscalar processor. Memory Hierarchy Technology: Hierarchical memory technology. Virtual Memory Technology: Virtual memory models- TLB, paging and segmentation.

UNIT -V

Pipelining: Linear Pipeline Processors - Asynchronous and synchronous models-Clocking and timing control-speedup, efficiency and throughput. Nonlinear Pipeline Processors: Reservation and latency analysis-Collision-Free scheduling-Pipeline schedule optimization. Instruction Pipeline Design: Instruction execution phases-Mechanisms for instruction pipelining-Dynamic instruction scheduling-Branch handling techniques. Arithmetic Pipeline Design: Computer arithmetic principles- Static arithmetic pipelines-Multifunctional arithmetic pipelines.

TEXT BOOK
1. Kai Hwang, "Advanced Computer Architecture", TMGH, India, 2008.

REFERENCE BOOK

1. Behrooz Parhami, "Introduction to Parallel Processing – Algorithms and Architectures" Plenum series, 2002.

2017-18 Onwards	Elective – II :	BCA
VI Semester	**MULTIMEDIA**	Elective: Theory
Hours: 5		Credits: 5

UNIT I

Multimedia Definition – Use Of Multimedia – Delivering Multimedia – Text: About Fonts and Faces – Using Text in Multimedia – Computers and Text – Font Editing and Design Tools – Hypermedia and Hypertext.

UNIT II

Images: Plan Approach – Organize Tools – Configure Computer Workspace – Making Still Images – Color – Image   File Formats. Sound: The Power of Sound – Digital Audio – Midi Audio – Midi vs. Digital Audio – Multimedia System Sounds – Audio File Formats –Vaughan's Law of Multimedia Minimums – Adding Sound to Multimedia Project.

UNIT III

Animation: The Power of Motion – Principles of Animation – Animation by Computer – Making Animations that Work. Video: Using Video – Working with Video and Displays – Digital Video Containers – Obtaining Video Clips – Shooting and Editing Video.

UNIT IV

Making Multimedia: The Stage of Multimedia Project – The Intangible Needs – The Hardware Needs – The Software Needs – An Authoring Systems Needs. Multimedia Production Team.

UNIT V

Planning and Costing: The Process of Making Multimedia – Scheduling – Estimating – RFPs and Bid Proposals. Designing and Producing – Content and Talent: Acquiring Content – Ownership of Content Created for Project – Acquiring Talent

TEXT BOOK

1. Tay Vaughan, "Multimedia: Making It Work", 8th Edition, Osborne/McGraw-Hill, 2001.

REFERENCE BOOK

1. Ralf Steinmetz & Klara Nahrstedt – "Multimedia Computing, Communication & Applications", Pearson Education, 2012.

2017-18 Onwards	Elective – III :	BCA
VI Semester	DATA MINING AND	Elective: Theory
Hours: 5	WAREHOUSING	Credits: 5

UNIT – I

Introduction: Data mining application – data mining techniques – data mining case studies- the future of data mining – data mining software - Association rules mining: Introduction- basics- task and a naïve algorithm- apriori algorithm – improve the efficient of the apriori algorithm – mining frequent pattern without candidate generation (FP-growth) – performance evaluation of algorithms.

UNIT – II

Classification : Introduction – decision tree – over fitting and pruning - DT rules-- naïve bayes method- estimation predictive accuracy of classification methods - other evaluation criteria for classification method – classification software

UNIT – III

Cluster analysis: cluster analysis – types of data – computing distances-types of cluster analysis methods - partitioned methods – hierarchical methods – density based methods – dealing with large databases – quality and validity of cluster analysis methods - cluster analysis software.

UNIT – IV

Web data mining: Introduction- web terminology and characteristics- locality and hierarchy in the web- web content mining-web usage mining- web structure mining – web mining software - Search engines: Search engines functionality- search engines architecture – ranking of web pages.

UNIT – V

Data warehousing: Introduction – Operational data sources- data warehousing - Data warehousing design – Guidelines for data warehousing implementation - Data warehousing metadata - Online analytical processing (OLAP): Introduction – OLAP characteristics of OLAP system – Multidimensional view and data cube - Data cube implementation - Data cube operations OLAP implementation guidelines

TEXT BOOK

1. G.K. Gupta, "Introduction to Data mining with case studies", PHI Private limited, New Delhi, 2008**.** 2nd Edition, PHI , 2011

REFERENCE BOOK

1. Arun K Pujari, "Data Mining Techniques", Universities Press (India) Pvt. Ltd, February 2013.

2017-18 Onwards	Elective – III :	BCA
VI Semester	**IMAGE PROCESSING**	**Elective: Theory**
Hours: 5		Credits: 5

UNIT - I

Digital Image: Introduction: Motivation and Perspective - Scenes and Images – Applications - Components of Images Processing System. Mathematical Preliminaries: Introduction - Vector Algebra - Linear Operations - Fourier Transform - Discrete Cosine and Sine Transform - Singular Value Decomposition - Probability and Statistics - Fuzzy Sets and Properties - Mathematical Morphology.

UNIT - II

Visual Preliminaries - Digitization: Introduction – Sampling – Quantization - Visual Detail in the Digital Image - Digital Image - Elements of digital Geometry.

UNIT - III

Image Enhancement: Introduction – Contrast Intensification – Smoothing – Image Averaging – Mean Filter – Low-pass Filtering – Image Sharpening.

UNIT - IV

Segmentation: Introduction – Region Extraction – Pixel-based Approach – Multi-Level Thresholding – Local Thresholding – Region-based Approach.

UNIT - V

Feature Extraction: Introduction – Representation – Topological Attributes - Geometrical Attributes – Some Other Properties.

TEXT BOOK

1. B.Chanda, D.Dutta Majumder, "Digital Image processing and analysis," 2nd Ed., PHI, 2011.

REFERENCE BOOKS

1. Gonzalez.R.C & Woods. R.E., "Digital Image Processing," 3rd Edition, Pearson Education, 2009.
2. Maria Petrou and Costas petrou, "Image Processing: The Fundamentals", 2nd Edition, Wiley, 2010.
3. Anil Jain.K, Fundamentals of Digital image Processing, Prentice Hall of India, 1989.
4. S.Jayaraman, S.Esakkirajan, and T.Veerakumar, "Digital Image Processing", TMH, 2009.

2017-18 Onwards	Elective – III :	BCA
VI Semester	**MOBILE COMPUTING**	Elective: Theory
Hours: 5		Credits: 5

UNIT – I

Introduction: Applications - A Simplified Reference Model. Wireless Transmission: Frequencies for radio transmission – Signals – Antennas - Signal Propagation – Multiplexing – Modulation – Spread Spectrum - Cellular System.

UNIT – II

Medium Access Control: Motivation for a Specialized MAC: Hidden and exposed terminals – Near and far terminals – SDMA – FDMA – TDMA: Fixed TDM – Classical Aloha. Reservation TDMA – Multiple Access with Collision Avoidance – Polling – Inhibit Sense Multiple Access. CDMA: Spread Aloha multiple access.

Unit – III

Telecommunication Systems: GSM: Mobile Services – System Architecture – Radio Interface – Protocols - Localization and Calling – Handover – Security. UMTS and IMT 2000: UMTS releases and standardization - UMTS System Architecture - UMTS Radio Interface –UTRAN - UMTS Handover.

UNIT – IV

Satellite System: History – Applications – Basics - Routing– Localization – Handover. Wireless LAN: IEEE 802.11: System Architecture – Protocol Architecture - Physical Layer – Medium Access Control Layer. Bluetooth: User scenarios – Architecture – Radio Layer – Baseband Layer – Link Manager Protocol.

UNIT – V

Mobile Network Layer: Mobile IP: Goals, Assumption, and Requirements – Entities and Terminology – IP Packet delivery – Agent discovery – Registration. Dynamic Host Configuration Protocol Mobile Transport Layer: Traditional TCP - Congestion Control – Slow Start – Fast Retransmit.

TEXT BOOK

1. Jochen Schiller, "Mobile Communications", 2nd Edition, eighth impression, Pearson Education, 2011.

REFERENCE BOOKS

1. William Stallings, "Wireless Communication and Networks", 2nd Edition, Pearson Education, 2005.
2. Theodore Rappaport, "Wireless Communications: Principles and Practice", Prentice Hall Communications,1996

SBEC-I: **INTERNET AND ITS APPLICATIONS**	
Course	BCA
Effective from	2017 – 2018 Onwards
Semester	II
SBEC	**SKILL BASED ELECTIVE COURSE**

Hours: 2   **Credits: 2**

UNIT - I
INTRODUCTION TO THE INTERNET: Computer in Business – Networking – Internet - E-mail – Resource Sharing – Gopher – World Wide Web – Telnet – Bulletin Board Service – Wide Area Information Service.

UNIT – II
INTERNET TECHNOLOGIES: Modem - Internet addressing – Physical connections – Telephone Lines – Internet browsers – Internet Explorer – Netscape Navigator.

UNIT - III
Web Server – Proxy Server – Web Browser – Search Engines – Search Tools – Firewalls – Data Security.

UNIT – IV
Internet Relay Chat – Types of Network – Packet Switched Network – Circuit Switched Network – TCP/IP – Internet Protocol.

UNIT - V
Case Study : Online Passport – Online Gas Services – Online Train Reservation – Tamilnadu government services

TEXTBOOKS
1. C Xavier, "World Wide Web with HTML", Tata McGraw Hill Education, 2000.
2. H.M.Deital, P.J. Deital,"Internet and World Wide Web – How to Program", 4th Edition "PHI Learning.
3. Raj Kamal, "Internet and Web Technologies", 7th Reprint, Tata McGraw Hill Education, 2007.

REFERENCE WEBSITES
1. http://www.ebharatgas.com/
2. http://passportindia.gov.in/
3. https://www.irctc.co.in
4. http://www.tn.gov.in/

SBEC – II: HTML AND JAVA SCRIPT	
Course	BCA
Effective from	2017 – 2018 Onwards
Semester	IV
SBEC	**SKILL BASED ELECTIVE COURSE**
Hours: 2	**Credits: 2**

UNIT I

Introduction: HTML, JavaScript, and HTML/JavaScript Documents – Accessing HTML Documents. HTML Document Basics: Documents, Elements, Attributes, and Values – HTML Syntax and Style - Using the script Element - Creating and Organizing a Web Site - Selecting and Using Colors - Using Cascading Style Sheets.

UNIT II

HTML Tables, Forms, and Lists: The table Element: Basic Table Formatting - Merging Cells across Rows and Columns. The form Element - Creating Pull-Down Lists - Combining Tables and Forms - E-Mailing the Contents of Forms - The List Elements.

UNIT III

Fundamentals of the JavaScript Language: Capabilities of JavaScript - Definitions - Structure of JavaScript Code - Data and Objects - Tokens, Operators, Expressions, and Statements - The JavaScript Math Object - Comparison Operators and Decision-Making Structures: Relational and Logical Operators - The if Construct - The switch Construct. Loop Structures: Count-Controlled Loops - Conditional Loops. Using JavaScript to Change Values in Form Fields.

UNIT IV

Using Arrays in HTML /JavaScript: Basic Array Properties - Operations on Arrays - Creating Two-Dimensional Arrays - Using Arrays to Access the Contents of Forms - Hiding the Contents of a JavaScript Script.

UNIT V

JavaScript Functions: The Purpose of Functions in Programming - Defining JavaScript Functions - Using JavaScript Functions with HTML Forms - Global Methods and Event Handlers - Recursive Functions - Passing Values from One Document to Another - Revisiting the JavaScript sort() Method

TEXT BOOK

1. David R. Brooks, "An Introduction to HTML and JavaScript for Scientists and Engineers," New age international (P) Ltd., 2010

REFERENCE BOOKS

1. Jon Duckett, "Beginning HTML, XHTML, CSS, and JavaScript," Wiley Publishing, Inc., 2010
2. Raymond Greenlaw, Ellen Hepp, "Fundamentals of the INTERNET and the World Wide Web," Second Edition, Tata McGraw Hill, 2005
3. C. Xavier, "World Wide Web Design with HTML," TMH, 2007

SBEC – III : Practical- **IMAGE EDITING TOOL**	
Course	BCA
Effective from	2017 – 2018 Onwards
Semester	V
SBEC	**SKILL BASED ELECTIVE COURSE**
Hours: 3	**Credits: 2**

1. Design a greeting card for birthday using different text effects.

2. Apply various filter effects to an image.

3. Design the front page of the college calendar using gradient.

4. Create a pattern using pattern stamp tool and clone stamp tool.

5. Design a web page layout.

6. Design a bunch of flowers.

7. Perform/Simulate Plastic Surgery on any part of the face.

8. Create See-through texts

9. Convert Black and White Photo to Color Photo

10. Fill a text with an appropriate image (Example: The word "Flower" should be filled with some flower images)

SBEC - IV: MULTI SKILL DEVELOPMENT	
Course	BCA
Effective from	2017 – 2018 Onwards
Semester	V
SBEC	**SKILL BASED ELECTIVE COURSE**
Hours: 2	**Credits: 2**

UNIT- I

Communication: Question tag – Gerund and Infinitives – Spotting the errors – Vocabulary – Synonyms – Antonyms - Prepositions – Articles – One word substitution – Sentence completion.

UNIT - II

Numerical Aptitude : Problems on numbers - Problems on Ages – Percentage - Profit and loss - Ratio & Proportion - Time & Work - Time & Distance - Simple Interest - Compound Interest.

UNIT - III

Critical Reasoning: Logical Inference Questions and Syllogism. Analytical Reasoning: Arrangement problems – Family / Blood Relation Qualms – Sense of Directions – Age Doubts. Verbal Reasoning: Verbal Analogy: Letter series - number series – Coding and Decoding.

UNIT- IV

Self Introduction - Soft Skills - Interpersonal Skills – Employability Skills – Soft Skills Training – Resume Preparation – Interview Tips and Questions.

UNIT- V

Group Discussion – Importance – Types of GD – GD Skills – GD Etiquette – Essential Elements of a GD – Movements and Gestures to be avoided in a GD

TEXT and REFERENCE BOOKS

1. Hari Mohan Prasad & Uma Rani Sinha, "Objective English for Competitive Examinations", Tata McGraw Hill Education Private Ltd., (Unit – I)
2. R.S. Aggarwal, "Quantitative Aptitude", S.Chand 2010. (Unit - II)
3. R.S. Agarwal, "A Modern Approach to Verbal Reasoning (Fully Solved)" –Revised Edition, S.Chand Company Limited, New Delhi, 2012. (Unit – III)
4. M. S. Rao, "Soft Skills Enhancing Employability-Connecting Campus with Corporate", IK International Publishing House, NewDelhi, 2010. (Unit – IV)
5. Alex.K, "Soft Skills-Know Yourself and Know the World", S.Chand Company Ltd., 2011. (Unit- V)

SBEC-V : **Practical - ANDROID PROGRAMMING**	
Course	BCA
Effective from	2017 – 2018 Onwards
Semester	VI
SBEC	**SKILL BASED ELECTIVE COURSE**
Hours: 3	**Credits: 2**

1. Sample Application about Android Resources

2. Sample Application about Layouts

3. Sample Application about Intents

4. Sample Application about user interfaces

5. Sample Application about Animations

6. Sample Application about SQLite I

7. Create Calculator App in Android

8. Create Simple Android Camera Application

9. Create Basic List View Demo in Android

10. Create Google Map in Android

SBEC-VI: SHELL PROGRAMMING	
Course	BCA
Effective from	2017 – 2018 Onwards
Semester	VI
SBEC	**SKILL BASED ELECTIVE COURSE**
Hours: 2	**Credits: 2**

UNIT – I

A Quick review of the Basics: Some Basic Commands – Working with Files – Working with Directories – Filename Substitution – Standard I/O and I/O Redirection – Pipes – Standard Error – More on Commands. What is the Shell? : The Kernel and the Utilities – The Login Shell – Typing Commands to the Shell – The Shell's Responsibilities.

UNIT – II

Tools of the Trade: Regular Expressions – Cut – Paste – sed – tr – grep – sort – uniq – Variables.

UNIT-III

The Single Quote – The Double Quote – The Backslash – Command Substitution. Passing Arguments: The $# Variables – The $* Variable – Program to Look up, Add, Remove from Phone Book – The shift Command.

UNIT - IV

Decisions : Exit Status – The test Command – The else Construct – The exit Command – The Elif Construct – The case command – The Null Command – The && and || Constructs.

UNIT – V

The For Command – The until command. Reading and Printing Data: The Read Command – The printf Command.

TEXT BOOK:

1. Stephen G.Kochan, Patrick Wood, "Unix Shell Programming", 3rd Edition, Pearson Education, 2006

REFERENCE BOOK:
1. Yashwanth Kanetkar, "Unix Shell Programming", BPB Publications, 1st Edition Reprint 2012.

NMEC-I : BASICS OF COMPUTERS

Course	**Offered to other department students**
Effective from	2017 – 2018 Onwards
Semester	III
NMEC	Non Major Elective Course
Hours: 2	**Credits: 2**

UNIT-I

Introduction to Computer: Introduction – Types of computers – Characteristics of Computers. Generations of Computers: First Generation – Second Generation – Third Generation – Fourth Generation – Fifth Generation. Classification of Digital Computers: Introduction – Microcomputers – Personal Computer – Portable Computers – Mini Computers – Super Computers – Main Frames.

UNIT – II

Number System: Introduction – Decimal Number System – Binary Number System – Binary-Decimal Conversion – Decimal Binary Conversion – Binary Addition – Binary Subtraction – Complements – 9's Complement – 10's Complement – 1's Complements – 2's Complements – BCD - Bits, Bytes, Words – Octal – Hexadecimal Number System.

UNIT-III

Anatomy of Digital Computer : Functions and Components of Computer – Central Processing Unit – Control Unit – Arithmetic – Logic Unit – Memory – Registers – Addresses. Memory Units: RAM, ROM, PROM, EPROM, EEPROM, And Flash Memory.

UNIT-IV

Input Devices: Introduction – Keyboard – Mouse – Types of Mice – Connections – Mouse pad – Trackball – joystick – Digitizing Tablet – Scanners – Digital Camera – MICR – OCR – OMR – Bar Code Reader – Speech Input Device- Touch Screen – Touch Pad – Light Pen. Output Devices: Introduction – Monitor – Classification of Monitors – Monochrome – Gray Scale – Color – Digital Monitor – Analog Monitor – Characteristics of monitor – Printers.

UNIT – V

Computer Software: Introduction – Operating System – Utilities – Compiler and Interpreters – Word Processor – Spreadsheets – Presentation Graphics – DBMS – Programming Languages: Machine Language – Assembly Language – High level language – Types of High Level Language. Data Processing: Data VS Information – File Processing – Sequential File Processing – Direct Access files Processing.

TEXT BOOK:

1. Alexis Leon and Mathews Leon, "Fundamentals of Computer Science and Communication Engineering", Leon Techworld, 1998.

REFERENCE BOOKS:

1. B Ram and Sanjay Kumar, "Computer Fundamentals", 5th Edition, New Age International Publishers, 2014.
2. Pradeep K Sinha, Priti Sinha, "Computer Fundamentals", BPB Publications, 2004.
3. Anita Goel, "Computer Fundamentals", 1st Edition, Pearson Education India, 2010.

NMEC-I : SYSTEM ADMINISTRATION AND MAINTENANCE	
Course	**Offered to other department Students**
Effective from	2017 – 2018 Onwards
Semester	III
NMEC	Non Major Elective Course
Hours: 2	**Credits: 2**

UNIT – I

Introduction to Personal Computer: Computer System – Purposes& Characteristics of Cases – Power Supplies – Internal Components – Ports – Cables – Input devices – Output devices. Safe Lab Procedures and Tool Use: Safe Working Conditions and Procedures – Tools and Software used with PC components.

UNIT – II

Computer Assembly: Open Case – Install Power Supply – Attach Components to Motherboard - Installation: Motherboard - Internal Drives – Drives in External Bayes -Adapter Cards. Internal cables connections –Reattach side panels – Connection of external cables – Boot the Computer. Preventive Maintenance and Troubleshooting: Purpose of Preventing Maintenance – Steps of Troubleshooting Process- Data Protection purposes.

UNIT – III

Fundamental Operating System: Purposes – Characteristics of Modern Operating Systems – Concepts–Comparisons, Limitations, and Compatibilities – Determination of Operating System based on Customer Needs – Installation of Operating System –Navigate a GUI (Windows) – Common Preventive Maintenance Techniques– Troubleshoot.

UNIT – IV

Fundamental Laptops and Portable Devices: Common Uses – Components of Laptop – Comparison of the components of Desktop and Laptops – Configure Laptops – Mobile Phone Standards – Preventive Maintenance Techniques - Troubleshoot Laptop and Portable Devices. Fundamental Printers and Scanners: Types of Printers and Scanners - Installation and Configuration Process of Printers and Scanners – Preventive Maintenance Techniques – Troubleshoot.

UNIT –V

Fundamental Networks: Principles – Types – Concepts and Technologies – Physical Components – LAN Topologies and Architectures– Standard Organizations – Ethernet Standards – OSI and TCP/IP Models – Configuration of NIC and Modem – Establishing Connectivity - Preventive Maintenance Techniques – Troubleshoot. Fundamental Security: Security Threats – Security Procedures - Preventive Maintenance Techniques – Troubleshoot Security.

TEXTBOOK

1. David Anfinson & Ken Quamme, "IT Essentials: PC Hardware and Software Companion Guide", 3rd Edition, Pearson Publications, 2008.

REFERENCE BOOK

1. Quentin Docter, Emmett Dulaneyand Toby Skandier, "CompTIA A+ Complete Review Guide: Exam 220-901, Exam 220 – 902", 3rd Edition, Wiley Publications, 2015.

NMEC-II : OFFICE AUTOMATION	
Course	**Offered to other department Students**
Effective from	2017 – 2018 Onwards
Semester	IV
NMEC	Non Major Elective Course
Hours: 2	**Credits: 2**

UNIT- I

Exploring word 2007: Working in the Word Environment - Opening, Moving Around in, and Closing a Document – Displaying Different Views of a Document – Creating and Saving a Document - Previewing and Printing a Document.

UNIT- II

Editing and Proofreading Documents: Make Changes to a Document – Insert Saved Text – Find the Most Appropriate word – Reorganize a Document Outline – Find and Replace Text.

UNIT- III

Error Corrections: Correct Spelling and Grammatical Errors – Finalize a Document. -Changing the Look - Quickly Format Text and Paragraphs – Manually Change the Look of Characters. – Manually Change the Look of Paragraphs.

UNIT- IV

Bulleted and Numbered Lists: - Create and Modify Lists - Presenting Information in Columns. Creating Table: Create a Tabular List – Present Information in a Table.

UNIT- V

Formatting a Table: Format Table Information – Perform Calculation in a Table – Use a Table to Control Page Layout.

TEXT BOOK

1. Joyce Cox and Team, "Step by Step 2007 Microsoft Office System", PHI Learning Private limited, New Delhi, 2009.

REFERENCE BOOK

1. Peter Weverka, "MS Office 2013 All-in-One for Dummies", 1st Edition, Wiley Publications, 2013.

NMEC-II : BASICS OF INTERNET	
Course	**Offered to other department students**
Effective from	2017 – 2018 Onwards
Semester	IV
NMEC	Non Major Elective Course
Hours: 2	**Credits: 2**

UNIT -1

Introduction To The Internet: Computer in Business – Networking – Internet - E-mail – Resource Sharing – Gopher – World Wide Web – Telnet – Bulletin Board Service – Wide Area Information Service.

UNIT – II

Internet Technologies: Modem - Internet addressing – Physical connections – Telephone Lines – Internet browsers – Internet Explorer – Netscape Navigator.

UNIT - III

Introduction to HTML: Designing a home page – HTML documents – Anchor tag – Hyper Links.

UNIT – IV

Traditional text and formatting – tables - images - frames

UNIT - V

Case Study: Online Passport – Online Gas Services – Online Train Reservation – Tamilnadu government services

TEXTBOOKS

1. C Xavier, "World Wide Web with HTML", Tata McGraw Hill Education, 2000.
2. H.M.Deital, P.J. Deital,"Internet and World Wide Web – How to Program", 4th Edition "PHI Learning.

REFERENCE WEBSITES

1. http://www.ebharatgas.com/
2. http://passportindia.gov.in/
3. https://www.irctc.co.in
4. http://www.tn.gov.in/

SEMESTER I / III	Allied Paper – I : C PROGRAMMING	Credits : 3 Hours: 4

UNIT– I

Overview of C: History of C – Importance of C – Basic structure of C programs. Constants, variables and data types: Character set – C Tokens – Keywords and identifiers – Constants – Variables – Data types – Declaration of variables - Declaration of storage classes – Assigning values to variables- Defining symbolic constants. Operators and expression –Types of Operators –Arithmetic Expressions - Evaluation of expressions – Precedence of arithmetic operators – Type conversions in expressions – Operator precedence and associativity. Managing input and output operations: Reading and writing a character – Formatted input and output.

UNIT– II

Decision making and branching: Simple IF, IF-ELSE, Nesting of IF-ELSE, ELSE-IF ladder, Switch statements – GOTO statements. Decision making and looping: WHILE statement – DO statement – FOR statement – Jumps in loops. Arrays: Definition & Declaration – One dimensional – Two dimensional – Multi dimensional arrays - Dynamic arrays.

UNIT – III

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – String handling functions – Table of strings. User – Defined functions: Introduction – Need for user – Defined function – A Multi- function program – Elements of user-Defined function – Definition of functions – Return values and their types – Function calls – Function declaration – All category of functions – Nesting of functions – Recursion – Passing arrays to functions – Passing strings to function.

UNIT – IV

Structures and Unions: Introduction – Defining a structure – Declaring structure variables – Accessing structure members – Structure initialization – Copying and comparing structure variables – Arrays of structures – Arrays within structures – Structures within structures – Structures and functions – Unions – Size of structures – Bit fields. Pointers: Introduction – Understanding pointers

– Accessing the address of a variable – Initializing of pointer variables. Chain of pointers – Pointer expressions –Pointers and arrays – Pointers and character strings – Arrays of pointers – Pointers as function arguments – Functions returning pointers – Pointers to functions – Pointer and structures.

UNIT – V

File Management: Introduction – Defining and opening a file –Closing a file – Input/Output operation on files – Error handling during I/O operations – Random access files – Command line arguments.

TEXT BOOK

1. E. Balgurusamy, "Programming in ANSI C", 5th Edition, Tata McGraw Hill, New Delhi, 2010.

REFERENCE BOOKS

1. Herbert Schildt, **"**C: The complete Reference", 4th Edition, McGraw Hill, 2003.
2. B.L.Juneja,"Programming in C", 1st Edition, Cengage Learning, 2012.

Note : This paper should be handled and valued by Computer Science Department.

SEMESTER I / III	Allied Practical – I : PROGRAMMING IN C	Credits : 2 Hours: 3

C Practical Programming List:

1. Create a program to find the Simple Interest and Compound Interest.

2. Create a program to find the mean and standard deviation.

3. To find the largest of a given set of numbers.

4. Create a program to find the given number is Prime or not.

5. Create a program to calculate sin(x) using series.

6. Create a program to print the Fibonacci series.

7. Create a program to generate Pascal triangle.

8. Create a program to convert Binary to Decimal conversion.

9. Create a program to calculate binomial co-efficient using recursion.

10. Create a program to reverse a string without using string library function.

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.

SEMESTER II / IV	Allied Paper – II : C++ PROGRAMMING	Credits : 3 Hours: 4

UNIT – I

Object-Oriented Programming: Principles – Benefits of OOP – Application of OOP – Tokens, Expression and Control Structures: Tokens – Keywords – Identifiers and Constants – Data types – Constants – Variables – Operators – Manipulators – Expressions – Control Structure.

UNIT – II

Functions – Prototyping – Call by Reference – Return by Reference – Inline Functions – Default Arguments – const Arguments – Function Overloading – Friend and Virtual Functions, Classes and Objects – Class – Member Functions – Arrays with in a Class – Memory Allocation for Objects – Static data members – Static member functions – Arrays of Objects – Objects as Function Arguments – Friendly Functions – Returning Objects – const Member Functions – Pointers to Members, Constructors and Destructors.

UNIT – III

Operator Overloading and Type Conversions, Inheritance: Extending Classes – Derived Classes – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance – Virtual Base Classes – Abstract Classes, Pointers, Virtual Functions and Polymorphism. Pointers: Pointers to Objects –this Pointer – Pointers to Derived Classes – Virtual Functions – Pure Virtual Functions

UNIT – IV

Managing I/O Operations: C++ Streams – C++ Stream Classes – Unformatted I/O and Formatted I/O Operations – Managing Output with Manipulators, Working with Files - Classes for File Stream Operations – Opening and Closing a File – Detecting end-of-file – File Pointers and their Manipulators – Sequential I/O Operations – Updating a File – Error Handling during File Operations – Command Line Arguments

UNIT – V:

Templates: Class Templates – Class Templates with Multiple Parameters – Function Templates – Function Templates with Multiple Parameters – Overloading of Template Functions – Member Function Templates – Non-Type Template Arguments, Exception Handling: Basics - Exception Handling Mechanism – Throwing Mechanism – Catching Mechanism – Rethrowing an Exception – Specifying Exceptions

TEXT BOOK

1. E.Balagurusamy, "Object Oriented Programming with C++", 5th Edition, Tate McGraw Hill Publication Ltd., New Delhi, 2011.

REFERENCE BOOKS

1. M. T. Somashekara, "Object Oriented programming with C++", 2nd Edition, Prentice Hall of India Learning Limited, 2012.
2. Behrouz A.Forouzan, "A Structured Approach Using C++", 2nd Edition, Cengage Learning, 2003.

Note :This paper should be handled and valued by Computer Science Department.

SEMESTER II / IV	**Allied Practical – II :** **PROGRAMMING IN C++**	**Credits : 2** **Hours: 3**

1. Write a C++ program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write member functions ADD(),SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.

2. Write a C++ program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.

3. Write a C++ program to create a class STRING. Write a Member Function to initialize, get and display stings. Overload the operators ++ and == to concatenate two Strings and to compare two strings respectively.

4. Write a C++ program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic, Salary, Grade. Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade.

5. Write a C++ program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various figures. Derive three classes SQUARE, RECTANGLE, TRIANGE from class Shape and Calculate Area and Perimeter of each class separately and display the result.

6. Write a C++ program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.

7. Write a program to convert an Infix Expression to Postfix Expression using Arrays.

8. Write a C++ program to create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element. Check for overflow and underflow conditions.

9. Write a C++ program to check whether the given string is a palindrome or not using Pointers.

10. Write a C++ program to merge two files into a single file

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.

SEMESTER I / III	Allied Paper – I : DATABASE SYSTEMS	Credits : 3 Hours: 4

UNIT- I

Introduction to Databases – Introduction - Characteristics of the Database Approach -Advantages of Using the DBMS Approach -A Brief History of Database Applications.

UNIT- II

Database Systems Concept and Architecture : Data Models, Schemas, and Instances - Three Schema Architecture and Data Independence - Database Languages and Interfaces- - The Database System Environment - Centralized and Client/Server Architectures for DBMSs- Classification of Database Management Systems.

UNIT- III

The Relational Data Model and SQL - Database Constraints - Relational Model Concepts- Key concepts - Relational Model Constraints and Relational Database Schemas - Update Operations, Transactions, and Dealing with Constraint Violations.

UNIT- IV

Basic SQL - SQL Data Definition and Data Types - Specifying Constraints in SQL - Basic Retrieval Queries in SQL - INSERT, DELETE, and UPDATE Statements in SQL - Additional Features of SQL.

UNIT- V

More SQL: Complex Queries, Triggers, Views, and Schema Modification - More Complex SQL Retrieval Queries - Specifying Constraints as Assertions and Actions as Triggers -Views (Virtual Tables) in SQL.

TEXT BOOK

1. RamezElmasri and Shamkant B. Navathe, "Fundamentals of database systems", 6thEdition, Addison-Wesley Publication, 2011.

REFERENCE BOOK

1. Raghu Ramakrishnan, Madison,Johannes Gehrke,"Database Management Systems", 3rd Edition,McGraw-Hill Higher Education, 2003.

Note: This paper should be handled and valued by Computer Science Department.

SEMESTER I / III	Allied Practical – I : MS-ACCESS	Credits : 2 Hours: 3

1. Create a database for a company and create a table for employee. Add fields emp_no, name, qualification, DOJ, designation and salary for employee table. And save the table in the database.

2. Create another table for customer and add fields cust_no, name, date_of_purchase, products, quantity, and price and save in the same company database.

3. Create table for personal information and Add at least 10 records for the table with the following fields no, name, DOB, address, ph_no, email_id, and blood group.

4. Create a new table for students and do table manipulations by Adding, deleting, and updating fields to the table.

5. Calculate the sum, average and assign the grade in the student table.

6. Display the students name in ascending and descending order after sorting.

7. Create a home budget table for calculate expenses of house for 4 months with the following fields month , house rent , EB , telephone bill, milk, grocery, vegetables, medical_exp ,total_exp

    i) find out the month on which the budget is high

    ii) List out all grocery expenses for all the months.

    iii) Find out the month on which the telephone bill is low.

    iv) Any other relevant filters.

8. For the employee table execute the following queries.

    i) List the manager name under each department using GROUP BY.

    ii) List the employees whose salary is greater than 10000 and less than 20000.

    iii) List out the employee details who is in morning shift.

9. Display the information of home budget table using columnar and tabular form.

10. Generate the report for any one of the above said tables.

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.

SEMESTER II / IV	Allied Paper – II : E – COMMERCE TECHNIQUES	Credits : 3 Hours: 4

UNIT- I

History of E-commerce and Indian Business Context: E-Commerce –Emergence of the Internet – Emergence of the WWW – Advantages of E-Commerce – Transition to E-Commerce in India – The Internet and India – E-transition Challenges for Indian Corporate. Business Models for E-commerce: Business Model – E-business Models Based on the Relationship of Transaction Parties - E-business Models Based on the Relationship of Transaction Types.

UNIT- II

Enabling Technologies of the World Wide Web: World Wide Web – Internet Client-Server Applications – Networks and Internets – Software Agents – Internet Standards and Specifications – ISP.E-Marketing : Traditional Marketing – Identifying Web Presence Goals – Online Marketing – E-advertising – E-branding.

UNIT- III

E-Payment Systems: Main Concerns in Internet Banking – Digital Payment Requirements – Digital Token-based e-payment Systems – Classification of New Payment Systems – Properties of Electronic Cash – Cheque Payment Systems on the Internet. Information systems for Mobile Commerce: Introduction – Wireless Applications – Cellular Network – Wireless Spectrum – Technologies for Mobile Commerce – Wireless Technologies

UNIT- IV:

HTML and Web Designing: Brief History of HTML – HTML Tags – Table Creation – Hyperlink – Reference – Headings – Alignment - Simple Web Page Creation.

UNIT- V:

E-mail: Email – Email Components - use of Email–Email creation–browsing–search engines–downloads.

TEXT BOOKS

1. P.T.Joseph, "E-Commerce - An Indian Perspective", 4th Edition, PHI Learning, 2012.

2. C Xavier, "World Wide Web Design with HTML", 13th Reprint, Tata McGraw Hill, 2006.

3. A.Leon and M.Leon, "Introduction to Information Technology", 1stEdition, Vijay Nicole Publications, 2013.

REFERENCE BOOKS

1. David Whiteley, "E-Commerce Strategy, Technologies and Applications", 1st Edition, Tata Mc-Graw-Hill, 2001.

2. Kamalesh K Bajaj and Debjani Nag,"E-Commerce – The cutting edge of Business", 2nd Edition,Tata McGraw-Hill Education, 2005.

3. Alexis Leon and Mathews Leon, "Internet for Everyone", 15th Anniversary Edition, Leon Tech world, UBS Publications, 2012.

4. Ritendra Goel, "e-commerce", New Age International Publishers, 2016.

Note: This paper should be handled and valued by Computer Science Department.

SEMESTER II / IV	Allied Practical – II : HTML PROGRAMMING	Credits : 2 Hours: 3

1. Write HTML code to develop a web page that contains the different background and foreground color, with various styles.

2. Write HTML code to create a Webpage that contains an Image at its left hand side of the page when user clicks on the image; it should open another web page that displays the details of that image.

3. Create a web Page using HREF tag having the attribute ALINK, VLINK etc.

4. Create a web page, when user clicks on the link it should go to the bottom of the page.

5. Write a HTML code to create a web page of pink color and display moving message in red color.

6. Create a web page, showing an ordered list of name of your five friends and unordered list of any five your hobbies.

7. Create a HTML document containing a nested list showing the content page of any book.

8. Create a student mark list in HTML using Tables.

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.

SEMESTER I / III	Allied Paper – I : COMPUTER APPLICATIONS IN OFFICE	Credits : 3 Hours: 4

UNIT - I

Introduction to Computers - Five Generations of Modern Computers - Classification of Digital Computer Systems - Anatomy of a Digital Computer - Memory units - Input and Output Devices - Auxiliary Storage Devices.

UNIT - II

Getting Started: Starting a Program - Identifying Common Screen Elements - Choosing Commands - Finding Common Ways to Work - Getting Help with Office

UNIT - III

MS-WORD: Learning Word Basics - Formatting a Word Document - Working with Longer Document.

UNIT - IV

MS-EXCEL: Creating a Simple Spreadsheet - Editing a Spreadsheet - Working with Functions and Formula - Formatting Worksheets - Completing Your Spreadsheet – Creating Charts.

UNIT - V

MS-POWERPOINT: Creating and Viewing Presentations - Editing a Presentation - Working with Presentation Special Effects.

TEXT BOOKS:

1. Alex Leon, Mathew Leon, "Introduction to Computers", Vikas Publishing, 2008.

2. Diane Koers, "Microsoft Office XP - fast & easy", Prentice Hall of India Private Limited, New Delhi, 2001

REFERENCE BOOKS

1. Joyce Cox &Team, "Step by Step 2007 Microsoft Office System", PHI Learning Private limited, New Delhi, 2009.

2. Peter Weverka, "MS Office 2013 All-in-One for Dummies", 1st Edition, Wiley Publications, 2013.

Note: This paper should be handled and valued by Computer Science Department.

SEMESTER I / III	Allied Practical – I : OFFICE AUTOMATION	Credits : 2 Hours: 3

Word Processor

1. i) Create a document, save it and edit the document as follows:
    a. Cut, Copy, Paste options.
    b. Find and Replace options.
    c. Undo and Redo options.
   ii) Format the document:
    a. Using Bold, Underline and Italic.
    b. Change Character style and size.
    c. Formatting paragraph: Center, Left aligns & Right align
    d. Changing paragraph and line spacing, Using Bullets and Numbering in Paragraphs.
    e. Creating Hanging Paragraphs

2. Enhance the documents using Header, Footer, Page Setup, Border, Page number, watermarking, Orientation and Print Preview.

3. Insert tables and pictures in a document as follows
    f. Creating Tables in a document, Selecting Rows & Column sort the record
    g. Insert a picture – edit size and add name of the picture above it.
    h. Also do basic text formatting like – bold, italic, underline, alignments etc in table.,

4. Using mail merge, send an invitation /notice (by creating the invitation/notice) for the following situation (at least 5 addresses to be entered) (Any one of the following)
    i. For opening a new branch
    j. Inauguration function
    k. Informing about new scheme or offer

Spreadsheet

5. a. Create a worksheet, moving/ copying/ inserting/ deleting rows and columns (usage of cut, paste, commands, copying a single cell, copying a range of data, filling up a cell. Undo command, inserting a row, column, deleting rows and columns).

   b. Formatting worksheets
        Bold, Italic, Font size changing, Auto fill, date format, Currency format

6. Open an excel and create fields as follows

S.No	Name of the student	M1	M2	M3	M4	M5	Total	Avg	Result	Grade

   v. Enter S.No, Name, marks for 10 students
   vi. Find total and average using formula.
   vii. Find Result whether the student is pass or fail and also assign grade as per our university norms.

viii. Insert a column chart showing the comparison of marks in different subjects of different students.

7. i) Creating and running a macro.
    ii) Assigning button to a defined macro.
    iii) Editing a macro.

Presentation

8. Create a presentation with apply background/Themes, apply custom animation on text, insert images/word art and animate the images with effects.

9. Create "My album" use photos, audio, and videos with necessary Transition Effects

10. Making an Organization Structure in Power Point
        Starting an organization chart, Entering names and Titles, Adding Members, Formatting the Boxes, Text and Lines, Rearranging the Org Chart, Finishing the Chart

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.

SEMESTER II / IV	**Allied Paper – II :** **IMAGE EDITING TOOL**	**Credits : 3** **Hours: 4**

UNIT-1

Getting Started with Photoshop CS5: Launching Photoshop CS5 - Exploring the Interface - Using Screen Modes - Opening an Existing Image - Opening an Image Using Adobe Bridge - Exploring Commonly Used Tools in the Tools Panel - Creating a New Document - Saving a Document - Reverting a Document - Selecting a Workspace - Creating a New Workspace - Deleting a Workspace - Working with Panels in Photoshop CS5 - Keyboard Shortcuts and Menu Settings - Customizing Preferences.

UNIT-2

Working with Images: Differences between Bitmap and Vector Images - Understanding Image Resolution Editing Images - Different Color Modes in Photoshop CS5 - Making Color Adjustments - File Formats in Photoshop CS5 -Creating a PDF File in Photoshop CS5 - Importing a PDF File into Photoshop CS5 - Making a Selection with Selections Tools - Modifying a Selection- Transforming a Selection - Transforming Pixels.

UNIT-3

Mastering Layers in Photoshop CS5: Exploring LAYERS Panel - Working with Layers -Organizing Layers Working with Opacity and Blend Modes - Working with Adjustment Layers - Masking in Photoshop CS5 - Setting the Current Foreground and Background Colors - Filling a Selection with the Current Foreground Color - Using the Content-Aware Feature - Exploring Drawing Tools - Exploring Painting Tools - Exploring Retouching Tools.

UNIT-4

Working with Layer Styles and Filter Effects: Understanding Layer Styles - Working with Smart Objects -   Understanding Filters.

UNIT-5

Animation, 3D, and Printing in Photoshop CS5: Working with Actions - Working with Automate Commands - Exploring 3D in Photoshop - Working with Animation in Photoshop CS5 - Printing in Photoshop CS5.

TEXT BOOK

1. Kogent Learning Solutions Inc,"Photoshop CS5 in Simple Steps", Dreamtech Press, New Delhi, 2012.

REFERENCE BOOKS

1. Brie Gyncild, "Adobe Photoshop CS6 Classroom in a Book", Adobe Press/Peachpit, 2012

2. Lisa Danae Dayley, Brad Dayley , "Adobe Photoshop Cs6 Bible", Wiley India Pvt Ltd.

3. Edward Bailey, "Photoshop: 7 Ways to Use Adobe Photoshop Like a Pro", Create space Independent Publishing Platform

Note: This paper should be handled and Valued by Computer Science Department.

SEMESTER II / IV	**Allied Practical – II :** **IMAGE EDITING SOFTWARE**	**Credits : 2** **Hours: 3**

1. Design a greeting card for birthday using different text effects.

2. Apply various filter effects to an image.

3. Design the front page of the college calendar using gradient.

4. Create a pattern using pattern stamp tool and clone stamp tool.

5. Design a web page layout.

6. Design a bunch of flowers.

7. Create Plastic Surgery for the Nose

8. Create See-through texts

9. Convert Black and White Photo to Color Photo

10. Fill a text with an appropriate image (Ex: Write Flower and fill it with some flower images)

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.

SEMESTER I / III	Allied Paper – I : PHP SCRIPTING LANGUAGE	Credits : 3 Hours: 4

UNIT – I

Basic of Coding in PHP: Mixing PHP and HTML – Introducing Variables and Operators – PHP Variables.

UNIT – II

Displaying Dynamic Content – Sending E-Mail – Using File System – Uploading Files to Website**.**

UNIT – III

Establishing a connection – Creating a Database Table – Inserting Data into the Table – Selecting and Displaying Data.

UNIT – IV

System Planning - Adding Contacts Modifying Contacts - Deleting Contacts - Working with Contacts.

UNIT – V

Managing a Simple Mailing List**:** Mailing List Software – Developing Subscription Mechanism, Mailing Mechanism. Creating Custom Logs and Reports.

TEXTBOOK

1. Julie Meloni and Matt Telles, "PHP 6", 3rd Edition, Cengage Learning India Edition, 2009.

REFERENCE BOOKS

1. Julie Meloni and Matt Telles, "PHP 6 Fast and Easy Web Development", 1st Edition, Cengage Learning India Edition, 2008.
2. Steven Holzner,"The Complete Reference PHP", Indian Edition,McGrawHill Education, 2007.

Note: This paper should be handled and valued by Computer Science Department.

SEMESTER I / III	Allied Practical – I : PHP PROGRAMMING	Credits : 2 Hours: 3

1. Write a PHP program to find the factorial of a number using forms.

2. Write a PHP program to design a login form using Conditional Statements.

3. Write a PHP program to design a visiting card.

4. Design a simple web page to generate multiplication table for a given number using PHP.

5. Design a web page that should compute one's age on a given date using PHP.

6. Write a PHP program to download a file from the server.

7. Write a PHP program to store the current date and time in a COOKIE and display 'Last Visited' date and time on the web page.

8. Write a PHP program to store page views count in SESSION, to increment count on each refresh and to show the count on web page.

9. Write a PHP program to design a calendar for the current year.

10. Write a PHP Program to create a time table for the current semester.

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.

SEMESTER II / IV	**Allied Paper – II :** **BASICS OF COMPUTER AND** **FINANCIAL COMPUTING**	**Credits : 3** **Hours: 4**

UNIT – I

Introduction to Computers – Classification of Digital Computer Systems – Anatomy of a Digital Computer – Memory Units – Input Devices – Output Devices – Auxiliary Storage Devices.

UNIT-II

Computer Software – Programming Languages – Operating Systems – Computer Networks – Internet – Electronic Mail.

UNIT-III

Introduction to Tally – Company Creation – Alter – Display – Accounts info – Ledger Creation – Voucher Creation – Bank Reconciliation Statement – Bill wise Details – Cost Centre and Cost Category – Multi Currency – Interest calculation – Budgets and Credit Limits – Day Book.

UNIT-IV

Inventory info – Stock Group – Stock Category – Stock Item – Unit of Measures – Godowns – Inventory vouchers – Re-order level and status – Batch-wise Details – Bill of Material.

UNIT-V

Statutory and Taxation – Value Added Tax (VAT) – Tax Deducted at Source (TDS) – Tax Collected at Source (TCS) – Service Tax – Security Control and Tally audit – Export and Import – Backup and Restore – Open Database Connectivity.

TEXTBOOKS

1. Alex Leon, Mathew's Leon, "Fundamentals of Computer Science and Communication Engineering", Vikas Publishing House, New Delhi, 1998.
2. A complete Reference - "Tally 9.0", Tally Solutions (P) Limited

REFERENCE BOOK

1. Dr.Namrata Agrawal, "Comdex Tally 9 Course Kit", Dreamtech Publications,New Delhi,2010.

2. Ritendraq Goel, D N Kakkar, "Computer Applications in Management", New Age International Publishers, 1st Edition Reprint 2008.

Note: This paper should be handled and Valued by Computer Science Department.

	Allied Practical – II :	
SEMESTER II / IV	**FINANCIAL COMPUTING SOFTWARE**	**Credits : 2** **Hours: 3**

1. Company Information

    a. Company creation

    b. Select Company

    c. Alter Company

    d. Split Company Data

2. Gateway of Tally

    a. Accounts info

        i) Groups

        ii) Ledgers

        iii) Voucher Types

    b. Inventory info

        i) Stock Group

        ii) Stock Category

        iii) Stock item

        iv) Unit of Measures

        v) Godown

    c. Accounting Vouchers

        d. Inventory Vouchers

3. Statutory and Taxation

    a. Value Added Tax (VAT)

    b. Tax Deducted at Source (TDS)

    c. Tax Collected at Source (TCS)

    d. Service Tax

4. Display

      a. Trial Balance

      b. Day Book

      c. Accounts Book

      d. Statement of Accounts

      e. Inventory Books

      f. Statement of Inventory

Note: For University Practical Exam, both Internal and External should be appointed from Department of Computer Science.