SOURASHTRA COLLEGE, MADURAI– 625004

(An Autonomous Institution Re-accredited with 'B' grade by NAAC)

BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

I SEMESTER

Sl. No.	Sub. Code	Nature	Subject Title	Hrs/ Week	Exam Hrs	CA	SE	Tot	Crd
1	17UACT11/ H11/ S11	Part-I	TAMIL/ HINDI/ SANSKRIT	6	3	25	75	100	3
2	17 UACE11	Part-II	ENGLISH	6	3	25	75	100	3
3	17 UCAC11	Part-III Core	Programming in C	4	3	25	75	100	4
4	17UCACP1	Part-III Core	Lab 1 : C Programming	5	3	40	60	100	3
5	17UCAA11	Part-III Allied	Discrete Mathematics	4	3	25	75	100	4
6	17UCAS11	Part-IV SBS	Scripting Language	3	3	25	75	100	3
7	14UACVE1	Part-IV	Value Education	2	3	25	75	100	2
			TOTAL	30					22

Passed in the BOS Meeting
held on 15-3-2017

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III **CORE**	**Title :** **PROGRAMMING IN C**	**Subject Code : 17 UCAC11**
Semester : I	**HOURS : 4 hours / Week**	**CREDITS : 4**

OBJECTIVES:

Enable the students to understand the basic concept of C language

UNIT-I: Overview of C : History of C –Importance of C – Basic structure of C – Programming style – Constants, variables and Data types – Declaration of variables, storage class – defining symbolic constants – declaring a variable as constant , volatile – overflow and underflow of data. Operators and expressions : arithmetic, relational, logical, assignment operators – increment and decrement operators, conditional operators, bitwise operators, special operators – arithmetic expression – evaluation of expressions – precedence of arithmetic operators – type conversion in expression – operator precedence and associativity-mathematical functions – managing I/O operations : reading and writing a character – formatted input , output.

UNIT-II:

Decision making and branching: if statement, if…else statement – nesting if … else statement – Else if Ladder – Switch statement – the ?: operator – go to statement.

Control Statements : The While statement – do statement – the for statement – jumps in loops Arrays : one dimensional array – declaration, initialization – two dimensional array – multi dimensional array – dynamic arrays – initialization,

UNIT-III:

Strings: declaration, initialization of string variables – reading and writing string – arithmetic operation on strings-putting strings together – comparison – string handling function – table of strings – features of sting. User Defined functions : need – multi function program – elements of user defined program – definition – return values and their types – function calls, declaration, category- all types of arguments and return values – nesting of functions – recursion – passing arrays – string to functions – scope visibility and life time of variables – multi file programs.

UNIT-IV:

Structures and unions : defining a structure – declaring structure variable – accessing structure members – initialization – copying and comparing – operations on individual members – arrays of structures – arrays within structures – structures within structures – structures and functions – Unions – Size of structures – bit fields.

UNIT-V:

Pointers – accessing the address of a variable – declaring, initialization of pointer variables – accessing a variable through it pointer – chain of pointers – pointer expressions – pointer increment and scale factors – pointers and arrays – pointers and character strings – array of pointers – pointers as function arguments – function returning pointers – pointers to functions – pointers and structure. Files : defining, opening, closing a file. I/O operations on files – error handling during I/O operations – random access to file – command line arguments.

TEXT BOOK(S):

1. Programming in ANSC C ,E.Balagurusamy, 4th Edition, Tata McGraw Hill Publishing Company, 2005.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I – Chap. 1 to 4 ; Unit II – Chap. 5 to 7 ; Unit III – Chap 8 and 9; Unit IV – Chap. 10

Unit V – Chap 11 and 12

REFERENCE BOOKS:

Programming with C (Schaum's outline series), Gotfried, Tata McGraw Hill, 2006

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BCA - COMPUTER APPLICATIONS - SYLLABUS

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PART - III **CORE**	**Title : Lab 1 :** **C PROGRAMMING**	**Subject Code : 17 UCACP1**
Semester : I	**HOURS : 5 hours / Week**	**CREDITS : 3**

OBJECTIVES:

Understand the concepts of programming technique and implementing thru C programming

[Two questions to be answered in the Summative practical examination
From 1 to 14 in the list, another one from 15 to 25 in the list]

Lab Cycle

1. To find sum of Digits of a number
2. To reverse given number and check if it is palindrome
3. To evaluate Sine Series
4. To generate the Armstrong Number
5. To find the nth Fibonacci Number
6. To check if a number is Primer Number of not
7. To Sort an Array
8. To count the occurrences of a number in a set
9. To check if a no is Adam Number
10. To reverse a given string and check if it is a palindrome
11. To find Factorial value, Fibonacci, GCD value using Recursion
12. To add and subtract two Matrices
13. To multiply two Matrices
14. To find row wise sum of matrix of order m x n
15. To solve Quadratic Equation – Switch
16. To perform binary search using Function
17. To calculate mean, variance and standard deviation using function
18. To prepare Pay Bill – Structure
19. To prepare Mark Sheet – Structure
20. To perform inventory calculation – Structure
21. To demonstrate the use of bitwise operators
22. To demonstrate the use of sizeof() operator
23. To prepare Mark Sheet – File
24. To prepare EB Bill – File
25 Graphics Programme – only two

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III **ALLIED**	**Title : DISCRETE MATHEMATICS**	**Subject Code : 17 UCAA11**
Semester : I	**HOURS : 4 hours / Week**	**CREDITS : 4**

OBJECTIVES:
To understand set theory, mathematical logic from the foundation. Graphs are used data structures to develop the various concepts of computer science

UNIT-I:
Set theory: Introduction –sets –subsets- operation on sets-properties of set operation.Relation: Cartesian product of two sets-relation-equivalence relation- closure and warshall'salgorithm.

UNIT-II:
Function: function and operators-one to one function- onto function – special type of functions. Mathematical Induction: Technical of proof –Mathematical induction.

UNIT-III:
Matrix Algebra: Introduction-matrix operation- rank of matrixe and elementary operations- simultaneous equations- Eigen values and Eigen vectors.

UNIT-IV:
Logic: Introduction- connectives –truth table of the formula –tautology-tautological implications and equivalence of formula –Replacement process

UNIT-V:
Graph Theory:Basic concepts- matrix representation of graph –trees- spanning trees- shorts path problem.

TEXT BOOK(S):
Discrete Mathematics - Dr. M. Venkatraman, Dr. N.Sridharan& N. Chandrasekara. The National Publishing Company.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)
Unit – I Chap. 1.1 to 1.20, 1.35 to 2.39; Unit – II – Chap 2.3 to 3.9, 3.21 to 4.7 ; Unit III – Chap. 6 5.37 to 6.44; Unit IV – Chap 9, 9.4 to 9.10, 9.23 to 9.39; Univ V – Chap 11 – 11.1 to 11.78

REFERENCE BOOKS:
Applied Discrete Structures for Computer Science, alanDoerr& Kenneth levasseur, AsianStudent Edition.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - IV **SBS**	**Title : SCRIPTING LANGUAGE**	**Subject Code : 17 UCAS11**
Semester : I	**HOURS : 3 hours / Week**	**CREDITS : 3**

OBJECTIVES:

Understand the concept of internet and its scripting languages using HTML/Java Script/VB Script

UNIT-I:

HTML: Body and text commands –Basic paragraph text tags – text styles – color values- hyperlinks – images – HTML interactions and enhancements.

UNIT-II:

List-Creating Table-Linking Document-Frames-Graphics to HTML Doc-Style sheet basic- Add style to document-Creating Style sheet Properties-Font-Text-List-Color and background color-Box-Display Properties.

UNIT-III:

Javascript and the Internet-Javascript Language Embedding javascript in HTML- Variables and Literals – Expressions and Operators – Control Statements and Functions-Dialog Box.

UNIT-IV:

Fundamentals of objects-Built in Objects and Functions- Netscape Objects – The Form Object – Windows and Frames - User Defined - Cookies.

UNIT-V:

VB Script-Security and vbscript – vbscript versus visual basic- Host environment-Placing vbscript code within an HTML document – variables – using operators – instrinct operators – intrinsic function. The Msgbox functions – input boxes – controlling the flow controls – passing arguments into procedure – intrinsic HTML – form controls – The button controls.

TEXT BOOK(S):

1. Bob Breedlove et al "WEB PROGRAMMING UNLEASHED"
2. Web Enabled Commerical Application Development Using HTML, DHTML, JavaScript, Perl, CGI – I. Bayross, BPB Publications, 2000 **(Unit 2 only)**

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

REFERENCE BOOKS:

Glee Harsah Cady and Pat MeGgregor "Mastering the Internet" BPB 1998
Snell,SamsTeachYourself Internet and Web Basic All in one(SAMS), Perasoneductions.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

II SEMESTER

Sl. No.	Sub. Code	Nature	Subject Title	Hrs/ Week	Exam Hrs	CA	SE	Tot	Crd
1	17UACT21 H21/ S21	Part-I	TAMIL/ HINDI/ SANSKRIT	6	3	25	75	100	3
2	17UACE21	Part-II	ENGLISH	6	3	25	75	100	3
3	17UCAC21	Part-III Core	Digital Computer Architecture	4	3	25	75	100	4
4	17UCACP2	Part-III Core	Lab 2 : Scripting Language	5	3	40	60	100	3
5	17UCAA21	Part-III Allied	Resource Management Technique	4	3	25	75	100	4
6	17 UCAS21	Part-IV SBS	System Software	3	3	25	75	100	3
7	14 UACES1	Part-IV	Environmental Studies	2	3	25	75	100	2
			TOTAL	30					22

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III **CORE**	**Title : DIGITAL COMPUTER ARCHITECTURE**	**Subject Code : 17 UCAC21**
Semester : II	**HOURS : 4 hours / Week**	**CREDITS : 4**

OBJECTIVES:

To learn about the basic principle of the system and the system architecture.

UNIT-I:

Gate Networks and Logic Design – Flip-Flops – R-S Flip Flop- D-Flip Flop-K-Flip-Flop-J-K-Master Slave flip-flops – Registers – Parallel-in-Parallel-out-Serial-in-Serial-out-Parallel-in-Serial-out-Serial-in-Parallel-out-Counter-Synchronous Counter-Asynchronous Counters-Adder Design.

UNIT-II:

Processing Unit-Fundamental Concepts: Register Transfers-Performing an Arithmetic or Logic operation-Fetching a Word from Memory-Storing a word in Memory. Execution of a complete Instruction-Multiple Bus Organization-Hardwired control-Micro programmed Control: Micro Instructions – Micro program Sequencing-Wide-Branch Addressing-Microinstructions with Next-Address Field-Pre fetching Microinstructions.

UNIT-III:

I/O Organization-Accessing I/O Devices - Interrupts: Interrupt hardware-Enabling/Disabling interrupts-Handling multiple Devices-Controlling Device Requests. DMA-Buses: Synchronous Bus-Asynchronous Bus-Interface Circuits: Parallel port-Serial port. Standard I/O interfaces: PCI Bus-SCSI Bus-USB.

UNIT-IV:

Memory-Basic Concepts-Semiconductor RAM Memories: Internal organization of Memory chips-Static Memories-Asynchronous/Synchronous DRAMs-Rambus Memory-ROM: PROM-EPROM-EEPROM-Flash Memory-Cache Memories: Mapping Functions-Virtual Memories-Memory Management Requirements.

UNIT-V:

Basic concepts of Pipelining: Role of Cache Memory-Pipeline performance-Data Hazards: Operand Forwarding-Handling Data Hazards in software-Size Effects-Instruction Hazards: Unconditional Branches-Conditional Branches and Branch Prediction-Superscalar Operation: Out-of-order Execution-Execution Completion-Dispatch Operation.

TEXT BOOK(S):

1. Digital Circuits & Design – S.Salivahanan, S.Arivazhagan – Vikas Publishing House Pvt.Ltd.,2002. (Unit 1 only)
2. Computer Organization – V.CarlHamachar, ZronkoG.Vranesic, Software O.Zaky-Tata McGraw Hill Publishers 4th Edition 1996. (Unit 2 to 5)

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit 1 - Text Book 1 : Chap 3.3, 5.3, 5.4,7.3 to 7.6, 7.10, 8.2, 8.9,9.2

Unit 2 to 5 - Text Book 2

Unit 2 – Chap 7 full Unit 3: Chap 4.1, 4.2,4.4, 4.5 to 4.7

Unit 4 – Chap 5.1 to 5.5, 5.7,5.8 Unit 5: – Chap 8.1 to 8.3, 8.6

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III **CORE**	**Title : LAB 2 : SCRIPTING LANGUAGE**	**Subject Code : 17 UCACP2**
Semester : II	**HOURS : 5 hours / Week**	**CREDITS : 3**

OBJECTIVES:
To learn and practice the basic HTML language thru various tags for web designing

Lab Cycle

1 Design a HTML file to demonstrate the various formatting tags.
2 Design a HTML file to create an Ordered list with numbering by lowercase roman numerals.
3 Design a HTML file to embed the image by image tag with its attribute.
4 Design a HTML file to create a class time-table using table tag.
5 Design a HTML file to insert a Framed Webpage.
6 Design a HTML file to create a Home page of your own using all HTML tags.
7 Design a HTML file to navigate from one website to another website.
8 Design a CSS file to demonstrate the use of FONT attribute.
9 Design a CSS file to align and transform the text.
10 Design a CSS file to demonstrate the border and margin attributes.
11 Write a VBScript code to simulate the digital clock, based on system time.
12 Write a VBScript code to change background color using buttons.
13 Write a VBScript code to Swap two numbers using function.
14 Write a Java Script code to simulate basic calculator.
15 Write a Java Script code to generate the prime numbers.
16 Write a Java Script code to demonstrate the native object "math" with any two functions.
17 Write a JSP application that validates the Login form.
18 Write a JSP application to retrieve the data using Post method.
19 Write a ASP application to display date & time using build-in-function.
20 Write a ASP application to redirect the request to any other page.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III **ALLIED**	**Title : RESOURCE MANAGEMENT TECHNIQUE**	**Subject Code : 17 UCAA21**
Semester : II	**HOURS : 4 hours / Week**	**CREDITS : 4**

OBJECTIVES:

To solve application problems like travelling salesman problem, graphical method, least cost method, vogel's approximation method using various tech.

UNIT-I:

Development of OR – Definition of OR-Modeling in OR-general methods for solving OR models-Main characteristics and phases of OR study- Tools and techniques and methods-Scientific methods in OR-Scope of OR.

UNIT-II:

Linear programming problems-Mathematical formulation of L.P.P-Slack and Surplus variables-Graphical solution of L.P.P.

UNIT-III:

Simplex methods- Computational procedure-Artificial variables techniques two phase method-Duality in linear programming.

UNIT-IV:

Mathematical formulation of assignment problem-Method for solving the assignment problems. – Traveling Salesman Problem.

UNIT-V:

Mathematical formulation of transportation problem-Optimal solution of T.P-Methods for obtaining initial feasible solution-Optimal solution-degeneracy in T.P-Unbalanced T.P.

TEXT BOOK(S):

"Resource Management Technique (OR) – New revised edition by Prof. V.Sundaram , K.S.Ganapathysubramanian, K.Ganesan – by A.R.Publications

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I – Chap 1, 1.1 to 1.7; Unit -2 , Chap 2, 2.1 to 2.5, 31.1, 31.2 ; Unit II Chap. 3, 31.3, 31.4, 3.2, 3.2.1. Unit – IV, Chap 8, 8.2 8.3, 8.5 to 8.9 ; Unit – V Chap 7, 7.1.7.53

REFERENCE BOOKS:

Operational Research – S.D.Sharma – KedarNathRamnath& Co. – 1997.

Operational Research – Gupta, Man Mohan, Gandhi Swarup –Sultan Chand Publications.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - IV **SBS**	**Title : SYSTEM SOFTWARE**	**Subject Code : 17 UCAS21**
Semester : II	**HOURS : 3 hours / Week**	**CREDITS : 3**

OBJECTIVES:

To learn the major tasks of system software of a computer system and to focus the internal working of hardware & software of a system

UNIT-I:

Introduction - System Software and Machine Architecture –Simplified Instructional Computer: SIC Machine Architecture-SIC/XE Machine Architecture-SIC Programming Examples– Traditional(CISC)machines:VAX Architecture-Pentium Pro Architecture-RISC Machines : UltraSPARC Architecture-PowerPC Architecture-Cray T3E Architecture .

UNIT-II:

Assemblers: Basic assembler Functions:A Simple SIC Assembler-Assembler Algorithm and Data Structures. Machine-Dependent Assembler Features: Instruction Formats and Addressing Modes-Program Relocation.

UNIT-III:

Machine Independent Assemblers Features: Literals-Symbol-Defining Statements-Expressions-Program Blocks-Control Sections and Program Linking. Assembler Design Options: OnePass Assemblers-Multi-Pass Assemblers.

UNIT-IV:

Compilers: Basic Compiler Functions: Grammars-Lexical Analysis-Syntactic Analysis-Code Generation. Machine independent Compilerfeatures: Structured Variables-Machine-Independent Code Optimization-Block Structured Languages.

UNIT-V:

Other System Software: Database Management Systems: Basic Concept of a DBMS-Levels of Data Description-Use of a DBMS- Text Editors: Overview of the Editing Process-User Interface-Editor Structure –Interactive DebuggingSystems: Debugging Functions and Capabilities-Relationship with other parts of the system-User-Interface Criteria

TEXT BOOK(S):

System Software An Introduction to System Programming by Leland L. Beck, Addison –Wesley Publication, 2005

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit 1 – Chap 1, Unit – 2 – Chap 2.1, 2.2 Unit-3 – Chap 2.1 to 2.4 Unit-4 – Chap 5.1, 5.3.1 to 5.3.2, 5.3.4 Unit 5 – Chap 7

REFERENCE BOOKS:

System Programming and Operating System, Dhamdhere,Tata McGraw Hill,

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III SEMESTER

Sl. No.	Sub. Code	Nature	Subject Title	Hrs/ Week	Exam Hrs	CA	SE	Tot	Crd
1	17UACT31/ H31/S31	Part-I	TAMIL/ HINDI/ SANSKRIT	6	3	25	75	100	3
2	17UACE31	Part-II	ENGLISH	6	3	25	75	100	3
3	16UCAC31/ 17UCAC31	Part-III Core	Introduction to Object Oriented Programming with C++	4	3	25	75	100	4
4	16UCACP3/ 17UCACP3	Part-III Core	Lab 3 : Object Oriented Programming with C++	5	3	40	60	100	3
5	16UCAA31/ 17UCAA31	Part-III Allied	Computer Based Financial Accounting	4	3	25	75	100	4
6	16UCASP1/ 17 UCASP1	Part-IV SBS	Lab 4 : DBMS Lab	3	3	40	60	100	3
7	16UCAN31/ 17UCAN31	Part-IV NME	Introduction to Information Technology	2	3	25	75	100	2
			TOTAL	30					22

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PART - III CORE	**Title : INTRODUCTION TO OBJECT ORIENTED PROGRAMMING WITH C++**	**Subject Code : 17 UCAC31/ 16 UCAC31**
Semester : III	**HOURS : 4 hours / Week**	**CREDITS : 4**

Objectives :
To understand the basic concepts of OOPS and to implement various functions.

UNIT-I: Software crisis – Software evolution – Basic concepts of object oriented programming- Benefits of OOP – Object oriented languages – Application of C++ - More C++ statements – Structure of C++ program- Creating the source file- Compiling and linking – Tokens –Keywords- Identifiers- Basic data types –User defined data types- Derived data types –symbolic constants – Type compatibility-Declaration of variables- Dynamic initialization of variables-Reference variables- operators in C++ - Manipulator- type cast operator- Expressions and implicit Conversions - Operator overloading – Control Structures – The main function- Function prototyping – Inline function- Function Overloading – Friends and Virtual functions.

UNIT-II: Specifying a class - Defining a member functions – marking an outside function Inline – Nesting of Member functions- Private member functions- Arrays within a class- Memory allocation for object - Static data members- static member function - arrays of objects- Objects as function arguments - Friendly functions– returning objects - const. member functions - pointers to members –
Constructors- Parameterized constructor multiple constructors in a class- Constructors with default arguments – dynamic initialization of objects- Copy constructor – Constructing two dimensional arrays – destructors.

UNIT-III: Defining operator overloading- Overloading unary operators – Overloading binary operators – Overloading binary operators using friends – Multiplication of Strings using operators – Rules for overloading operators – Types of conversion – Defining derived classes- Single Inheritance – Making private member inheritable – Multilevel inheritance – Multiple inheritance- Hierarchical inheritance- Hybrid inheritance – Virtual base classes- Constructors in derived classes- member classes- member classes: nesting of classes.

UNIT-IV: Pointer to objects this pointer- pointers to derived classes- virtual functions- Pure Virtual functions- C++ stream classes - Unformatted I/O Operation- Managing output with manipulators.

UNIT-V: Classes for file stream operations- Opening and closing a file – Detecting end of File- more about open() – File modes file pointers and their manipulation – sequential input and output operations- Command line arguments. Templates: Class templates- Function templates – Member function templates – Exception Handling – Syntax of Exception handling code

TEXT BOOK(S):
Object oriented programming with C++ - ByE. Balagurusamy, Tata McGraw Hill Publishing Company Ltd 6th edition.
CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)Unit I – Chap 1 to 4 Unit II – Chap 5 & 6 Unit III – Chap 7 & 8 Unit IV – Chap 9,10 Unit V – Chap 11 to 13

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BCA - COMPUTER APPLICATIONS - SYLLABUS

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PART - III CORE	**Title : Lab 3 : OBJECT ORIENTED PROGRAMMING WITH C++**	**Subject Code : 17UCACP3/ 16UCACP3**
Semester : III	**HOURS : 5 hours / Week**	**CREDITS : 3**

Objectives :

To learn and practice the students to know the basic concepts of oops through C++ lang.

Lab Cycle

1. To perform Area calculation using Function overloading (min three functions).
2. To perform string manipulation using function overloading.
3. To demonstrate the concept of friend function.
4. To swap two values between two class objects using friend function.
5. To find minimum of two numbers between two class objects using friend function.
6. To overload unary minus operator which changes sign of given vector (3 elements).
7. To overload Binary + operator which adds two complex numbers.
8. Implementation of mathematical operations on strings { Overload two operators + and <=}
9. To demonstrate single inheritance of a public data member and a private data member
10. To process students mark list using multiple inheritance.
11. To process employee details using hierarchial inheritance.
12. To process inventory details using multilevel inheritance.
13. To process family details using hybrid inheritance
14. To illustrate the use of Virtual base class
15. To process electricity billing using binary file
16. To process mark listing using binary file
17. To implement Searching concept using C++
18. To implement Sorting concept using C++
19. To handle exceptions
20. To illustrate use of class templates
21. To illustrate use of function templates.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III ALLIED	**Title : COMPUTER BASED FINANCIAL ACCOUNTING**	**Subject Code : 17UCAA31/ 16UCAA31**
Semester : III	**HOURS : 4 hours / Week**	**CREDITS : 4**

Objectives :

To learn the basic concept of accounting and concept of tally package.

UNIT-I:

Accounting –Principles, Convention-Journal-ledger- Trial Balance.

UNIT-II:

Preparation of Subsidiary books : sales book - purchase book - purchase return book – sales return book – bills receivable book – bills payable book – cash book.

UNIT-III:

Preparation of Trading, Profit and Loss Accounts, Balance Sheet of Individual only.

UNIT-IV:

Accounting ratios: return on investment - Net profit ratio - gross profit ratio – expense ratio - operating profit ratio – proprietary ratio - debt equity ratio – fixed assets ratio – current ratio – liquidity ratio.

UNIT-V:

Financial Accounting Package (Tally 6.3): Accounts masters-Vouchers entry – Reports printing – Tally Review (features)

TEXT BOOK(S):

1. Advanced Accountancy: R.L. Gupta &RadhaSwamy-Sulthanchand Publishers 2004 (Unit 1 to 3)
2. Management Accounting by Dr.Peer Mohamed, Dr. Shazuli Ibrahim, Pass Publicatons (Unit 4)
3. "Implementing Tally 9" Comprehensive guide for Tally 9 & 8.1 by Nadhani

Allotment of marks for External Examination

Note : Theory 50%
Problems 50%

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I & II (Text Book 1) : Page 1.2.1 to 1.2.16 , 1.6.1 to 1.6.34 ; Unit III (Text Book 1)Page 1.7.1 to 1.7.39; Unit – IV (Text Book 2) Page 3.01 to 3.23 ; Unit-V (Text Book 3) – Page 2-4.1 to 2-4.82. and 2-5.1 to 2-5.11 and 2-15.1 to 2-15.2

REFERENCE BOOKS:

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - IV **SBS**	**Title : Lab 4 : DBMS LAB**	**Subject Code : 17UCASP1/ 16UCASP1**
Semester : III	**HOURS : 3 hours / Week**	**CREDITS : 3**

Objectives :

To enable the student to handle data thru database application like oracle and sql queries. Know about data definition and data manipulation and structured query language

DBMS LAB CYCLE

1.Data definition language programs.

2.Data manipulation language programs.

3.Data manipulation with arithmetic operations.

4.Data manipulation with logical operation.

5.Data manipulation with conditional or comparison operations

6.Data manipulation with Aggregate functions of number functions.

7.Data manipulation with group by operations.

8.Data manipulation with set operations.

9.Data manipulation with sub-queries operations.

10.Data manipulation with join query for two or more table.

11.Data manipulation with mathematical functions.

12.Data manipulation with character functions.

13.Data manipulation with date functions.

14.Data manipulation with special operations.

15.Data manipulation with STRING OPERATORS

16.PL/SQL program for calculating Area of circle.

17.PL/SQL program for generate Even Number.

18.PL/SQL program for generate Prime Number.

19.PL/SQL program for checking an Adam Number.

20.PL/SQL program for checking an Number palindrome or Not.

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(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - IV NME	**Title : INTRODUCTION TO INFORMATION TECHNOLOGY**	**Subject Code : 17UCAN31/ 16UCAN31**
Semester : III	**HOURS : 2 hours / Week**	**CREDITS : 2**

Objectives :

To introduce I.T in various platform – knowledge about input and output devices – application program – operating system and internet .

UNIT-I:

Introduction : Information systems – software and data – IT in Business and Industry – IT in the Home and at Play – IT in Education and Training – IT in Entertainment and the Arts – IT in Science , Engineering and Mathematics – Computers in Hiding.

UNIT-II:

The Computer system and Central Processing Unit : Types of Computers – Corporate and Department computers – Desktop and Personal computers – The Anatomy of computer – The Foundation of Modern Information Technology ; Binary numbers, Digital signals, Bits and Bytes – Central Processing unit – Memory.

UNIT-III:

Input and Output : I/O Devices – Keyboards – Inputting Text, Graphics – Pointing Devices – The foundation of Modern Outputs : Pixels and Resolutions, Fonts, Color – Display Screens – Printers. Secondary Storage : The foundation of modern storage ; How data is stored, Storage characteristics – Storage media : Floppy Disk, Hard disk, Drivers, Optical disk – Backing up of data.

UNIT-IV:

Software : Introduction – User Interface – Application programs – Operating systems : Introduction , Types, File management and Utilities – Major Software issues.

UNIT-V:

Internet and World Wide Web : Introduction – The Web – Getting connected to the Web – Browsing the Web – Locating information on the Web – Web multimedia.

TEXT BOOK(S):

Information Technology – The Breaking Wave By Dennis P.Curtain, Kim Foley, KunalSen, Cathlen Morin – Tata MCGraw Hill Publ.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I – Chap 2 (Except 2.1, 2.10,2.11) Unit II – Chap 3 (Except 3.7 to 3.9); Unit III – Chap 4 & 5 (Except 4.5,4.12 to 4.15 and 5.6, 5.8,5.9) ; Unit IV – Chap 6 (Except 6.8,6.10,6.11) ; Unit V – Chap 1 (Except 1.7)

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IV SEMESTER

Sl. No.	Sub. Code	Nature	Subject Title	Hrs/ Week	Exam Hrs	CA	SE	Tot	Crd
1	17UACT41/ H41/S41	Part-I	TAMIL/ HINDI/ SANSKRIT	6	3	25	75	100	3
2	17UACE41	Part-II	ENGLISH	6	3	25	75	100	3
3	17UCAC41	Part-III Core	Programming in Java	4	3	25	75	100	4
4	17UCACP4	Part-III Core	Lab 5 : Programming in Java	5	3	40	60	100	3
5	17UCAA41	Part-III Allied	Numerical Methods	4	3	25	75	100	4
6	17 UCASP2	Part-IV SBS	Lab 6 : Computer Graphics & Multimedia Lab	3	3	40	60	100	3
7	17UCAN41	Part-IV NME	Web Programming	2	3	25	75	100	2
8		Part-V	Extension Activities		3	25	75	100	1
			TOTAL	30					23

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III CORE	**Title : Programming in Java**	**Subject Code : 17UCAC41/16UCAC41**
Semester : IV	**HOURS : 4 hours / Week**	**CREDITS : 4**

Objectives :

To learn how to develop the programming code for various applications by various concepts

UNIT-I: Fundamentals of Object-Oriented Programming : Introduction –OOP Paradigm – Basic concepts of OOP – Benefits of OOP – Applications of OOP - Java Evolution : Jave features –Differs from C and C++ - Java and Internet – Java Environment.

UNIT-II:Overview of Java Language : Introduction – Simple Java Program – Java Program Structure – Tokens – Statements – Implementation – JVM – Command Line Arguments - Constants, Variables and Data Types.

UNIT-III:Operators and Expressions – Decision Making and Branching – Decision Making and Looping : Introduction – The while Statement – The Do Statement – The For Statement – 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: Extending a class – Overriding Methods - Arrays, Strings: Introduction – One –dimensional Arrays – Creating an Array – Two-dimensional Arrays – Strings.

UNIT-IV:Managing Errors and Exception : Introduction – Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing Our Own Exceptions - Interfaces : Multiple Inheritance: Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces - Packages : Putting Classes Together : Introduction – Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a class to a package .

UNIT-V: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 –Applet Programming : Introduction – How Applets Differ from Applications – Preparing to 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 - More About Applet Tag – Passing Parameters to Applets - Aligning the Display – More About HTML Tags – Displaying Numerical Values – Getting Input from the User - Event Handling - Summary Managing Input/Output Files in Java :Introduction – Concept of Streams – Stream Classes - Character Stream Classes – Using Streams - Creation of Files – Reading/Writing Characters – Reading/Writing Bytes

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TEXT BOOK(S):
Programming with Java – A primer – 4th Edition -E. Balagurusamy,Tata McGraw-Hill, New Delhi.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)
Unit I – Chap 1,2 Unit II – Chap 3,4 Unit – III – Chap 5,6,7 ; Unit IV – Chap 13 ; Unit V – Chap 12,14,16

REFERENCE BOOKS:
The Complete Reference Java 2 , Patrick Naughton, Herbert Scheldt, Tata McGraw Hill, fifth edition, 2006.

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PART - III CORE	**Title : Lab 5: PROGRAMMING IN JAVA**	**Subject Code : 17UCACP4/ 16UCACP4**
Semester : IV	**HOURS : 5 hours / Week**	**CREDITS : 3**

Objectives : To develop various programming code for different applications using java concepts

Lab cycle

1. To perform addition of complex numbers using class and objects.
2. To perform multiplication of matrices using class and objects.
3. To perform volume calculation using method overloading
4. Using command line arguments, test if the given string is palindrome or not
5. Using multilevel inheritance process student marks
6. Implement multiple inheritance for payroll processing
7. Package Illustration
8. To Illustrate built-in exceptions(any four)
9. To illustrate user defined exceptions(at least four)
10. To create multiple threads
    a) Using thread class
    b) Using Runnable interface
11. String manipulation using string methods
12. File- byte stream
13. File – character stream
14. Applet – Graphical methods
15. Applet – threads
16. Implementing JDBC

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(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III ALLIED	Title : NUMERICAL METHODS	Subject Code : 17 UCAA41/ 16 UCAA41
Semester : IV	HOURS : 4 hours / Week	CREDITS : 4

Objectives :

To solve various application problems like iteration method , newton raphson method, trapezoidal rule etc. in computers

UNIT-I:

Algebraic and Transcendental equations : Errors in Numerical computation – Iteration method – bisection method – Regular falsi method – Newton Raphson Method

UNIT-II:

Simulation equation : Gauss Elimination method – calculation of inverse of matrix – Gauss seidal method. Curve fitting method of least squares

UNIT-III:

Interpolation : Newton's interpolation formula – central differences interpolation formula – lagrange's interpolation formula – Inverse interpolation

UNIT-IV:

Numerical Differentiation : Newton's forward and back ward difference formula – Numerical Integration : Trapezoidal rule – simpson's rule. Eigen values and eigen vectors of a matrix

UNIT-V:

Numerical solution of differential Equation : Euler's method- Taylor's series method – Range kutta method

TEXT BOOK(S):

S. Arumugam and A.Thangapandiissac , A. Soma sundaram "Numerical methods" , Scitech publication Chennai 2002"

CHAPTERS and SECTIONS (For UNIT-I, II, III, IV and V)

Unit I – Chap 3 , 3.0 to 3.5 ; Unit – II – Chap 4, 4,3 and 4.5 , 4.8 ; Unit –III Chap 7, 7.1 to 7.3 and 7.6 ; Unit – IV Chap 8, 8.1, 8.2, 8.5, 5.0 to 5.2 ; Unit – V – Chap 10, 10.1 to 10. 4

REFERENCE BOOKS:

1) Numerical methods T.Veerajan and J.Ramchandran 2nd edition Tata MC raw Hill 2006.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - IV **SBS**	**Title : Lab 6 :** **COMPUTER GRAPHICS** **& MULTIMEDIA**	**Subject Code : 17 UCASP2/** **16 UCASP2**
Semester : IV	**HOURS : 3 hours / Week**	**CREDITS : 3**

Objectives :

To learn about the basic drawing concepts
To learn about different algorithm used in graphics system
To learn about Multimedia concept using various software

Computer Graphics

1. DDA Line Drawing Algorithm.
2. Bresenham's Line Drawing Algorithm.
3. Bresenham's Circle Drawing Algorithm.

MULTIMEDIA (Flash/Photoshop/Premier/3d Studio Max)

1. Creating a sample image
2. Editing existing image's brightness, mode color and add and edit layer style.
3. Stitch and edit two images into single image. Use selection tools Lasso tool, Clone stamp.
4. Study about time line concepts. Insert text, image. Use scaling rotation alignment.
5. Study Masking concepts. Use audio in the movie.
6. Add buttons, menus, actions to the movie.
7. Export movie .Use multiple scenes.
8. Insert text, image, sprite to the movie.
9. Add effects to the text (predefined and user defined)

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - IV NME	**Title : WEB PROGRAMMING**	**Subject Code : 17 UCAN41/ 16 UCAN41**
Semester : IV	**HOURS : 2 hours / Week**	**CREDITS : 2**

Objectives :
To understand the concept of web page designing using tags

UNIT-I:
Overview of HTML-structure of a html program-HEAD tag-BODY tag-paragraph tag-formatting tag- (Bold-underline-italic-strike thru-superscript-subscript)

UNIT-II:
LISTS-Ordered list and unordered list-marquee tag-break tag-ruler tag-foot tag-data definition tag.

UNIT-III:
TABLES-TABLE building tags and attributes of table-table tag-table header tag-table row tag-table data tag-row span-column span.

UNIT-IV:
LINKS-linking pages using anchor tag-attributes of anchor tag-image tag and its attributes-frame tag.

UNIT-V:
FORMS-Form tag-input tag-types-text,radio,button,check,password-sample webpage creation.

TEXT BOOK(S):

HTML COMPLETE-BPB publications-2nd edition

CHAPTERS and SECTIONS:
Unit I : Chap 3 Unit II: Page No. 817 to 821,718,719,735,736, 746 to 748, 757,837 to 839 and 915 to 917 Unit III : Chap 7 Unit IV : Chap 5, Chap 8(Page No. 266 to 277), Chap 4 (P.No. 129 to 140) Unit V : Chap 11

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(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

V SEMESTER

Sl. No.	Sub. Code	Nature	Subject Title	Hrs/ Week	Exam Hrs	CA	SE	Tot	Crd
1	16UCAC51/ 17UCAC51	Part-III Core	Visual Programming	5	3	25	75	100	4
2	16UCACP5/ 17UCACP5	Part-III Core	Lab 7 : Visual Programming Lab	5	3	60	40	100	4
3	16UCAC52 / 17UCAC52	Part-III Core	Data Structure & Computer Algorithms	5	3	25	75	100	4
4	16UCACP6/ 17UCACP6	Part-III Core	Lab 8 : Data Structure & Computer Algorithms Lab	5	3	60	40	100	4
5	16UCAC53/ 17UCAC53	Part-III Core	Operating System	5	3	25	75	100	4
6	16UCAE51/ 17UCAE51	Part-III Elective	Multimedia and Its Applications*	5	3	25	75	100	5
	16UCAE52/ 17UCAE52		Mobile Computing*						
7	16USSS51	Self Study	Soft Skills					100	0
			TOTAL	30					25

***One elective paper has to be chosen out of two electives**

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III CORE	**Title : VISUAL PROGRAMMING**	**Subject Code : 17UCAC51/ 16UCAC51**
Semester : V	**HOURS : 5 hours / Week**	**CREDITS : 4**

Objectives :

To learn the programming using visual basic concept and integrated development environment

UNIT-I:Starting a new project- the properties of window-Common form properties-Scale properties –color properties-Making a form responsive-Printing a visual-representation of a form – typos-creating stand alone windows programs-the toolbox-Creating controls- the name (control name)property-Properties of common buttons-simple event procedures for command buttons-access keys-Image controls- Text Boxes-labels-Navigating between controls- Message- boxes-The grid –The ASCII-representation of forms.

UNIT-II:Statements in Visual Basic –Variables-Setting properties with code-Data types-Working with variables-more on strings- More on numbers- constants-Input boxes-Displaying information on a form-The format function-Picture boxes-Rich text Boxes-The Printer Object-Determination loops-indeterminate loops-Making decisions –Select case- Nested IF-Then's- The Go To String functions- Numeric functions- Date & Time functions- financial-functions.

UNIT-III:Function procedures-sub procedures-advanced uses of procedures and functions-Using the object Browser to navigate among your subprograms-List: One-dimensional arrays-Arrays with more than one dimension-Using Lists and array with functions and procedures-The new array-based string-records(User-Defined types).

UNIT-IV:The with statements-Enums-Control arrays-List and Combo Boxes-The Flex grid control-code Modules: Global Procedures-The Do Events Function and sub main Accessing windows function-Error Trapping, Creating and Object in visual Basic-Building your own classes.

UNIT-V: Fundamentals of graphics –Screen scales- The line and shape controls-Graphics via code-Lines and Boxes-Circles, Ellipses and Pie charts. The mouse event procedures-Dragging and dropping operations-File commands-Sequential files- Random access files-Binary files- File system controls-The File system objects-The clipboard-Running another window program from within.

TEXT BOOK(S):

"VISUAL BASIC 6 from the GROUND UP", Gray Cornell, Tata McGraw Hill Edition 1999.
CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)
Unit I – Chap 3,4 Unit II – Chap 5 to 8 Unit III – Chap 9,10 Unit IV – Chap 11,13 Unit – V Chap 16, to 20

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III CORE	**Title : Lab 7 : VISUAL PROGRAMMING LAB**	**Subject Code : 17UCACP5/ 16UCACP5**
Semester : V	**HOURS : 5 hours / Week**	**CREDITS : 4**

Objectives :

To develop programming code for various applications using various tools in VB – handing event management – sub procedures and function procedures

LAB CYCLE

1. Program to design a digital Clock
2. Object type questionnaire.
3. Program to vary color palette.
4. Program to show picture animation.
5. Program to create a file open dialogue to load a picture.
6. Program to design a arithmetic calculator.
7. Program to create a mouse down event program
8. Menu Creation with simple file and edit operation.
9. Sequential file reading and writing.
10. Process students' Mark list using data control
11. Process library maintenance using data control
12. Process telephone billing using data control
13. Process stock inventory using data control
14. Program using DAO to create a simple Address Book
15. Program using DAO to create simple Hotel Reservation form software with examples transactions such as reservation, check in and logout.
16. Develop a system for Library Management using ADO.
17. Develop simple Student Information System using ADO connections.
18. Program for supermarket billing using sequential File.
19. Program for stock Maintenance System using Random Access File.
20. Design a Data Report for Students marks details.
21. Design a Data Report for Employee Pay Bill.
22. Program using ADO for managing Telephone Directory.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

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PART - III CORE	**Title : DATA STRUCTURES & COMPUTER ALGORITHMS**	**Subject Code : 17UCAC52/ 16UCAC52**
Semester : V	**HOURS : 5 hours / Week**	**CREDITS : 4**

OBJECTIVES:

To implement variety of basic data structure and understand the different solution.

UNIT-I:**Introduction and Overview :** Introduction – Basic terminology; Elementary Data Organization-Data Structures – Data Structure operations **Arrays and Records :** Introduction – Linear arrays-Representation of Linear arrays in Memory –Traversing Linear Arrays – Inserting and Deleting- Sorting : Bubble sort-Searching : Linear search –Binary Search –Multidimensional arrays.

UNIT-II:**Linked Lists:** Introduction- Linked Lists –Representation of Linked Lists in Memory – Traversing a Linked List- Searching a Linked List- Memory Allocation; Garbage Collection-Insertion into a Linked List- Deletion from a Linked List- Header Linked Lists

Stacks and Queues : Introduction –Stacks- Array Representation of Stacks-Linked Representation of Stacks-Arithmetic Expressions: Polish Notation-Quick sort, Application of Stacks

UNIT-III:Trees: Introduction- Binary Trees – Representing Binary Trees in memory - Traversing Binary Trees- Traversal Algorithms using stacks –Header Nodes : Threads-Binary Search Trees- Searching and Inserting in Binary Search Tree

UNIT-IV:Sorting and Searching : Introduction – Sorting – Insertion sort – Selection Sort – Merging – Merge Sort – Radix Sort

Graphs and their applications : Introduction – Graph Theory Terminology – Traversing a Graph

UNIT-V:**Divide and conquer:** The general method-finding the maximum and minimum-Greedy method: The general method-Knapsack Problem-Minimum spanning tree-single source shortest paths.

Dynamic Programming: The general method-Multistage graphs-all pairs shortest paths-Optimal binary search trees-the travelling salesman problem

TEXT BOOK(S):

1. Data Structures – Seymour Lipschutz- Schaum's outlines, The McGraw-Hill (Unit I to Unit IV)
2. Fundamentals of Computer algorithms-Ellis Horowitz, Sartajsahni,Galgottia Publications Pvt. Ltd. New Delhi. (Unit – V)

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I – Chap 1. 1.1 to 1.4 , 4.1 to 4.9 ; Unit –II Chap: 5.1 to 5.9, 6.1 to 6.6 ; Unit 3- Chap. 7.1 to 7.8;
Unit 4 Chap 9.1. to 9.7, 8.1, 8.2, 8.7
Unit V : Chap 3 – 3.1, 3.4,4.1,4.3,4.6, 4.9,5.1 to 5.3, 5.5 and 5.9

REFERENCE BOOKS:

Data structure and Algorithm Analysis in C-Mark Allen Weiss-Second edition-Addison Wesley publishing company 1997.

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PART - III CORE	**Title : Lab 8: DATA STRUCTURES & COMPUTER ALGORITHMS**	**Subject Code : 17 UCACP6/ 16 UCACP6**
Semester : V	**HOURS : 5 hours / Week**	**CREDITS : 4**

OBJECTIVES:

Implementation of Data Structures Concept using C++ Language

Lab Cycle

1. Write a c++ program to perform stack operation using arrays.
2. Write a c++ program to perform stack operation using pointers.
3. Write a c++ program to perform queue op eration using arrays.
4. Write a c++ program to perform queue operation using pointers.
5. Write a c++ program to implement singly linked list.
6. Write a c++ program to implement doubly linked list.
7. Write a c++ program to perform linear search.
8. Write a c++ program to perform binary search.
9. Write a c++ program to perform insertion sort.
10. Write a c++ program to perform selection sort.
11. Write a c++ program to perform shell sort .
12. Write a c++ program to perform quick sort.
13. Write a c++ program to perform bubblesort .
14. Write a c++ program to perform merge sort.
15. Write a c++ program to convert infix to postfix expression.

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PART - III CORE	Title : OPERATING SYSTEM	Subject Code : 17 UCAC53/ 16 UCAC53
Semester : V	HOURS : 5 hours / Week	CREDITS : 4

OBJECTIVES:

To learn various interface functions between hardware and system and to know various system like files and memory system in computer

UNIT-I:Introduction –Definition-Mainframe. Multiprocessor. Distributed, Clustered, Real-time, Handheld systems-I/O and storage structure –Hardware protected-Network structure –System Components-System Services. Calls, Programs, structure- System Design, Implementation and generation.

UNIT-II:Process Management: Process concepts,Scheduling, operations-operating processes-Inter-process communication in Client-Server systems-Multithreading models and issues –Windows 2000 and Java threads-CPU scheduling criteria and algorithms –Multi-processor and Real-time scheduling-Algorithm Evaluation –Process scheduling in Windows 2000.

UNIT-III:Process Synchronization –Critical-section problem-Synchronization Hardware-Semaphores –Classic problems- Critical Regions-monitor-synchronization in windows 2000-Deadlock characterization, Prevention, Avoidance and Detection-Recovery from Deadlock.

UNIT-IV:Storage management: Swapping –Contiguous memory allocation-Paging-Segmentation-Segmentation with paging-Demand paging-Process creation –Page replacement-Allocation of Frames-Thrashing-Implementation of Virtual memory in Windows NT-File Concepts and Access methods-directory Structure & implementation-Allocation methods-Free space management.

UNIT-V:I/O Systems and Case Study: Disk structure, Scheduling and Management-Swap Space Management –Case Study: Windows 2000.

TEXT BOOK(S):

Operating system Concepts-SilbertschartzA.Galvin P.B., Gagne G-Sixth Edition, 2002, John Wiley & sons.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I – Chap 1,2,3 (Except 1.3,2.1,3.6) Unit II – Chap 4,5,6 Unit III – Chap 7,8 (Except 7.1,7.9, 8.1,8.3) Unit IV – Chap 9,10 Unit V – Chap 14 (14.1 to 14.4)

REFERENCE BOOKS:

Operating system Concepts and Design, Milan Milankovic,Tata McGraw Hill, 1997.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

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PART - III ELECTIVE	Title : MULTIMEDIA AND ITS APPLICATIONS	Subject Code : 17UCAE51/ 16UCAE51
Semester : V	HOURS : 5 hours / Week	CREDITS : 5

Objectives :

To learn many graphical applications and animation by implementing the graphical and multimedia software

UNIT-I:

Introduction-Branch overlapping Aspects of Multimedia Content –Global Structure - Multimedia Literature. Multimedia- Media and Data Streams- Medium.

UNIT-II:

Sound/Audio: Basic Sound Concepts-Music- Speech, Images and Graphics: Basic Concepts:-Computer Image Processing- Video and Animation: Basic Concepts – Television – Computer Based Animation.

UNIT-III:

Data Compression: Storage Space –Coding Requirements –JPEG- MPEG-DVI, Optical Storage Media; Computer Technology –Multimedia Operating System.

UNIT-IV:

Networking System: Layers, Protocols and Services, Networks, Metropolitan Area Networks, WAN, Multimedia Communication System.

UNIT-V:

User Interfaces, Synchronization, Abstraction for Programming: Abstraction Levels-Libraries-System Software-Toolkit-Higher Programming Languages. Multimedia Application: Introduction - Media Population – Media Communication –Trends.

TEXT BOOK(S):

1.Ralf Steinmetz &KlaraNahrstedt – "Multimedia Computing, Communication & Applications", Pearson Education.

CHAPTERS and SECTIONS :Unit I : Chap 1.1 to 1.4, 2.1 Unit II: Chap. 3.1 to 3.3, 4.1 to 4.2 and 5.1 to 5.3 Unit III: Chap 6.1 to 6.2, 6.5,6.7,6.8 and Chap 9. Unit IV : Chap. 101. To 10.2, 10.4 to 10.5 and Chap 11. Unit V : Chap. 14,15, 16.1 to 16.5, 17.1,17.2,17.5 and 17.8

REFERENCE BOOKS:

1. Fred t, Hofstetter – " Multimedia Literacy" – 3rd edition TMH.

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III Elective	**Title : MOBILE COMPUTING**	**Subject Code : 17UCAE52/ 16UCAE52**
Semester : V	**HOURS : 5 hours / Week**	**CREDITS : 5**

Objectives :
To learn about the various mobile devices, internet protocols and formats, embedded control, voice and connectivity

UNIT-I:

Information Access Devices –Handheld Computers –Palm OS –Based Devices-Windows CE –Based Handheld Computers –EPOC Based Handheld Computers –Sub notebooks –Phones –Cellular Phones –Data transmission capabilities –Smart Phones –Screen phones

UNIT-II:

Smart Identification-Smart cards –smart labels –smart Tokens –**Embedded Controls**-Smart sensors and Actuators –Smart Appliances-Appliances and home networking –Automotive computing

UNIT-III:

Internet Protocols and Formats –HTTP- HTML-XML-Xforms-**Mobile Internet**-WAP 1.1 Architecture –Wireless Application Environment 1.1 –WAP 2.0 Architecture –i-node

UNIT-IV:

Voice –Voice Technology Trends –Voice on the web –Standardization.

UNIT-V:

Connectivity-Wireless Wide Area Networks –Short Range Wireless Communication

TEXT BOOK(S):

Principles of Mobile Computing –UweHansmann, LotherMerk, Martin S.Nicklous, Thomas Stober –Springer –Second Edition -2003

CHAPTERS and SECTIONS:

UNIT-I : Chap. 2.1 to 2.10 Unit II : Chap 3.1 to 3.3 and 4.1 to 4. Unit III: Chap 10.1 to 10.4, 11.1 to 11.4 Unit IV : Chap 12.1 to 12.3 Univ V : Chap 14.1 to 14.2

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VI SEMESTER

Sl. No.	Sub. Code	Nature	Subject Title	Hrs/ Week	Exam Hrs	CA	SE	Tot	Crd
1	16UCAC61/ 17UCAC61	Part-III Core	Software Engineering	5	3	25	75	100	4
2	16UCAC62/ 17UCAC62	Part-III Core	Computer Networks	5	3	25	75	100	4
3	16UCAC63/ 17UCAC63	Part-III Core	Principles of Information Security	5	3	25	75	100	4
4	16UCACP7/ 17UCACP7	Part-III Core	Lab 9 : Dot Net Programming Lab (VB/ASP)	5	3	60	40	100	4
5	16UCAE61/ 17UCAE61	Part-III Elective	Data Mining*	5	3	25	75	100	5
	16UCAE62/ 17UCAE62		Unix & Shell Programming*						
6	16UCAEV1/ 17UCAEV1	Part-III Elective	Project Work & Viva-Voce	5	3	25	75	100	5
7	16UGKB61	Self Study	General Knowledge					100	0
			TOTAL	30					26

***One elective paper has to be chosen out of two electives**

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PART - III CORE	**Title : Software Engineering**	**Subject Code :17 UCAC61/ 16 UCAC61**
Semester : VI	**HOURS : 5 hours / Week**	**CREDITS : 4**

OBJECTIVES:

To understand the basic concept of software development environment with various models and techniques and gaining knowledge about maintenance activity

UNIT-I:

Introduction to software Engineering Some definition- Some size factors-Quality and productivity factors-Managerial issue.

Planning a software Project : Defining the problem –Developing a solution strategy –planning the development process-Planning an organizational structure –other planning activities

UNIT-II:

Software cost Estimation: Software –Cost Factors –Software cost estimation techniques – Staffing level estimation –estimating software maintenance costs.

UNIT-III:

Software requirements definition: The software requirements specification – Formal specification techniques - Formal languages and processors for requirements specification (Except RSL/REVS).

UNIT-IV:

Software Design : Fundamental Design Concepts –Modules and modularizing Criteria –Design Techniques –Detailed Design Consideration –Real time and Distributed System design –Test Plan –Mile Stones walk through and inspection –Design guide lines

UNIT-V:

Verification and validation techniques: Quality assurance –Static Analysis –Symbolic Execution - Unit Testing and Debugging -System testing –Formal verification.

Software Maintenance : Enhancing maintainability during development –Managerial aspects of software maintenance –Configuration management –source code metrics-other maintenance tools and techniques.

TEXT BOOK(S):

Software Engineering Concepts , Richard E. Fairly. Tata McGraw -Hill book Company, 2005.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I – Chap. 1 and 2 Unit – 2 Chap 3; Unit – 3 Chap 4; Unit IV – Chap 5; Unit V-Chap. 8 & 9

REFERENCE BOOKS:

Software Engineering, Jawadekar, Tata McGraw-Hill book Company,2004

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III CORE	**Title : COMPUTER NETWORKS**	**Subject Code :17UCAC62/ 16UCAC62**
Semester : VI	**HOURS : 5 hours / Week**	**CREDITS : 4**

OBJECTIVES:

Study about the computer networks, applications, topology, layers, sharing, types of networks, DNS, E-Mail

UNIT-I:

Introduction : Uses of computer Networks –Network Hardware –Network Software – Reference Models –Example Networks.

UNIT-II:

The Physical Layer: Guided Transmission Media –Wireless Transmission-Communication Satellites –Mobile telephone System.

UNIT-III:

The Data Link Layer : Data Link Layer Design Issue –Error Detection and Correction – Elementary Data Link Protocols –Sliding Window Protocols-The Channel Allocation Problem – Multiple Access Protocols –ALOHA, CSMA, Collision free protocols.

UNIT-IV:

The Network Layer: Network Layer Design Issues-Routing Algorithms –Shortest path, Flooding , Hierarchical and Broadcast. The Transport Layer: The Transport Service Elements of Transport Protocols.

UNIT-V:

The Application Layer : DNS- The Domain Name System –Electronic Mail –The World Wide Web – Multimedia.

TEXT BOOK(S):

Computer Networks by Andrew S. Tanenbaum 4th Edition, Prentice Hall of India ,2006.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit I – Chap 1.1 to 1.5 Unit –II – Chap 2.1 to 2.4 & 2.7 Unit III – Chap 3.1 to 3.4 & 4.1,4.2.1 to 4.2.3 Unit IV – Chap 5.1, 5.2.2, 5.2.3, 5.2.6, 5.2.7, 7.6.1 & 6.2 Unit – V – Chap 7.1 to 7. 3

REFERENCE BOOKS:

Data Communications and Networking, Forouzan, Tata McGraw Hill,2003.
Data and Computer Communications, William Stallings, Pearson education,7th edition, 2003

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III CORE	**Title : PRINCIPLES OF INFORMATION SECURITY**	**Subject Code :17UCAC63/16UCAC63**
Semester : VI	**HOURS : 5 hours / Week**	**CREDITS : 4**

OBJECTIVES:

To learn the requirements of information security for the safe utilization and storage of information in a system

UNIT-I:

Information Security:

History of Information Security – What is Security – Components of Information System - Security System Development Life Cycle – Security Professionals and the Organization – Communities of Interest – Information Security Is it an Art or Science.

UNIT-II:

Why Security is Needed :

Business Needs First **– Threats:** Deliberate Software Attacks : Virus,Worms,Trojan Horses – Deviations in Quality of Services – Forces of Natures – Human Error or Failure – Thefts – Technical Hardware Failure or Errors – Technical Software Failure or Errors. **Attacks:** Malicious Code , Hoaxes , Backdoors , Password Check , Denial of Service , Spoofing , Spam , Mail bombing , Timing Attack.

UNIT-III:

Managing IT Risk:

Overview of Risk Management – **Risk Identification** : Plan and Organize the Process , Asset Identification and Inventory , Information Asset Valuation – **Risk Control Strategies:** Defend , Transfer ,Mitigate , Accept , Terminate – **Selecting Risk Control Strategy:** Feasibility Studies , Cost Benefit Analysis (CBA), Evaluation,Assessment and Maintenance of Risk Control

UNIT-IV:

Plan for Security: Information Security , Planning and Governance – Information Security Policy , Standards and Practices : Definition,EISP , ISSP – Security Education , Training and Awareness Program – Continuity Strategies : Business Impact Analysis , Incident Response Planning.**Security Technology : Access Control –** Identification, Authentication , Authorization , Accountability

UNIT-V:

Security Technology : Firewalls – Firewall Processing Modes , Firewall Categorized by Generation , Firewall Categorized by Structure , Remote Access , VPN **Scanning And Analysis Tools :Port** Scanner , Firewall Analysis Tools , Operating SystemDetection Tools , Vulnerability Scanners , Packet Sniffers - **Biometric Access Tools .**

TEXT BOOK(S):

Principles of Information Security – Michael E.Whitman and Herbert J.Mattord 4th Edition.

CHAPTERS and SECTIONS (For UNIT-I, II, III,IV and V)

Unit – I – Chap 1 P. No. 3 to 11 , 16 to 19 26 to 32 ; Unit –II – Chap 2, Page No. 39 to 48, 54 to 57, 63 to 69, 72 – timing attack only; Unit – III – Chap 4 – P.No. 117 to 132, 144 to 153 ; Unit IV – Chap 5,6 P.No. 168 to 178,203 to 221, 238 to 242 ; Unit V – Chap 6,7 P.No.242 to 255, 270 to 277, 318 to 326, 331 to 333

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BCA - COMPUTER APPLICATIONS - SYLLABUS

(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III CORE	**Title : Lab 9 : Dot Net Programming Lab (VB/ASP)**	**Subject Code :17UCACP7 /16UCACP7**
Semester VI	**HOURS : 5 hours / Week**	**CREDITS : 4**

OBJECTIVES:

To implement basic program in .net framework like console & windows application

LAB CYCLE

CONSOLE APPLICATION

1. Calculating Sales and Commission.
2. Preparation of EB-Bill
3. Structure using Multiple Records.
4. SORTING Numbers in an given array
5. FUNCTION OVERLOADING using Switch Case

WINDOWS APPLICATION

6. Using ComboBox Displaying Shapes.
7. Calculation of Simple Interest and Compound Interest
8. Creation of Class Checking ARMSTRONG & REVERSE a Number.
9. Displaying Directories Using TREEVIEW
10. Dialog Control (Open,Save,Color,Font)
11. Factorial, +ve –vezero,Sum of series using Status and Progress Bar.
12. Using INHERITANCE calculating Net Salary
13. STRING Manipulation.

DATABASE CONNECTIVITY

14. Retrieving Record using DATAGRID
15. Displaying Record Using ComboxBox, ListBox and DataGrid.
16. Searching and Retrieving Record.
17. Updating a record using LISTVIEW
18. Payroll Processing by using EXCEL as Backend
19. Marksheet Processing application using ACCESS as Backend

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PART - III ELECTIVE	Title : DATA MINING	Subject Code :17UCAE61/ 16UCAE61
Semester : VI	HOURS : 5 hours / Week	CREDITS : 5

OBJECTIVES:

To understand concept of data ware housing, data mining, clustering techniques,neural networks and web mining

UNIT-I:

Data Warehousing –Introduction –Definition –Multidimensional Data Model –OLAP operations-Warehouse Schema –Architecture-Metadata-OLAP Engine- Backend Process.

UNIT-II:

Data Mining –Definition –Comparison with other fields-Techniques –Issues- Application Areas **Association Rules-**Methods-A Priori algorithm –Partition Algorithm –Pincer Search Algorithm-Border Algorithm –Generalized association rule –Item constraints.

UNIT-III:

Clustering Techniques –Paradigms –Algorithms –CLARA-CLARANS-Hierarchical clustering –DBSCAN-Categorical Clustering Algorithms-STIRR **Decision Trees –**Tree construction principle –Best split-Splitting indices –criteria – algorithms –CART –ID3.

UNIT-IV:

Other Techniques – Neural Network – Genetic Algorithm – Rough Sets –Support vector machines.

UNIT-V:

Web Mining –Introduction –Web content mining –web structure mining –web usage mining –text mining –hierarchy of categories- text clustering.

TEXT BOOK(S):

Data Mining techniques – Arun K Pujari –Universities Press -2001

CHAPTERS and SECTIONS Unit : Chap 2 (Except 2.8,2.1) . Unit II: Chap 3 (Except 3.11), Chap. 4 4.1 to 4.6 4.13,4.14,4.15 Unit III: Chap 5. (Except 5.9,5.10,5.13 to 5.15) Chap 6 – 6.1 to 6.9. Unit IV : Chap 8 8.2,8.6,8.7,7.1 to 7.3 Univ V : Chap 9(Except 9.7 and 9.8)

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(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART - III ELECTIVE	Title : UNIX & SHELL PROGRAMMING	Subject Code :17UCAE62/ 16UCAE62
Semester : VI	HOURS : 5 hours / Week	CREDITS : 5

OBJECTIVES:

Understand and learn the concept of Unix operating system

UNIT-I: Introduction –**UNIX for beginners** :Getting started-Day-to-day use: files and common commands-More about files: directories-The shell-The rest of the UNIX system-**The file system**: The basics of files-What's in a file?-Directories and filenames-Permissions-Inodes-The Directory hierarchy-Devices.

UNIT-II: Using the shell: Command line structure-Met characters-creating new commands-command arguments and parameters-Program output as arguments-Shell variables-More on I/O redirection-Looping in shell programs-bundle: putting it all together-Why a programmable shell?-**Filters:** Thegrep family-Other filters-The stream editor sed-The awk pattern scanning and processing language-Good files and good filters.

UNIT-III: Shell Programming : Customizing the cal command-which command is which?-while and until loops: watching for things-Traps: catching interrupts-Replacing a file:overwrite-zap:killing processes by name-The pick command: blanks vs. arguments-The news command: community service messages-get and put: tracking file changes-A look back-**Programming with standard I/O:**Standard input and output: vis- Program arguments: vis version 2-File access: vis version 3-A screen-at-a-time printer: p-Anexample:pick-On bugs and debugging-An example: zap-An interactive file comparison program: idiff-Accessing the environment.

UNIT-IV:UNIX System Calls-Low-level I/O-File system: directories-File system: inodes-Processes-Signals and interrupts

UNIT-V:Program Development –A four-function calculator-Variables and error recovery-Arbitrary variable names; built-in functions-Compilation into a machine-Control flow and relational operators-Functions and procedures; input/output-Performance evaluation-A look back-**Document Preparation**-The ms macro package-The troff level-The tbl and eqn preprocessors-The manual page-Other document preparation tools.

TEXT BOOK(S):

The UNIX Programming Environment –Brian Kernighan, Rob Pike –Pearson Education -2003.

CHAPTERS and SECTIONS :

Unit I : Chap 1 and 2 Unit II : Chap-3 and 4 Unit III: Chap-5 and Chap-6 Unit IV- Chap-7. Unit – V : Chap 8 and 9

REFERENCE BOOKS:

Introducing UNIX System V- Rachel Morgan, Henry McGilton-McGrawHill International Editions.

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(Under CBCS w.e.f. 2017 – 2018 onwards & 2016-17 Batch)

PART-III ELECTIVE	**Title : PROJECT WORK & VIVA-VOCE**	**Subject Code : 17UCAEV1/ 16UCAEV1**
Semester : VI	**HOURS : 5 hours / Week**	**CREDITS : 5**

Objectives:

- To give exposure on software development and maintenance
- To train students, a systematic way of Report writing
- To practice students for project presentation

1. A maximum of two students can join to do the project work
2. Students must undertake the project work under the guidance of a faculty member
3. Progressive reports have to be submitted to the guide periodically
4. The internal test marks is 40 and is divided into the following components.

   (i) Two Presentations - 2 X 10 = 20 marks

   (ii) Progressive Reports - 10 marks

   (iii) Internal Viva-voce - 10 marks

5. The external examination will be jointly conducted by both the Internal and external examiners
6. The students must submit 3 copies (2 copies for 2 students + 1 copy for the Dept.) of their Project Report two weeks before the external examination.
7. The maximum marks for the external examination is 60 and it may be divided into the following components.

   (i) Project Report - 20 marks

   (ii) Project Presentation - 20 marks

   (iii) Project viva-voce - 20 marks

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