

**CMS COLLEGE OF SCIENCE & COMMERCE
(AUTONOMOUS)**

(Affiliated to Bharathiar University)

**An ISO 9001: 2008 Certified Institution and Re-accredited at the
'A' level with a CGPA of 3.53 out of 4 by NAAC
Chinnavedampatti, Coimbatore - 641 049**

Email: info@cmscbe.com

Website: www.cmscbe.com



Since 1988

I Bachelor of Computer Applications (BCA)

SCHOOL OF COMPUTER SCIENCE

SYLLABUS

SCHEME OF EXAMINATION (CBCS)

2015 Onwards

SCHOOL OF COMPUTER SCIENCE REGULATIONS

INTRODUCTION

Applications of computer are one of the thrust areas in science and technology. In appreciation of its growing importance in business and visualizing the career prospects. The curriculum of this course is framed with theoretical concepts in computer applications and the students are capable of meeting the ever-changing challenges, having earnestly qualified themselves to be well ahead of time in the IT world.

The training imparted aims to prepare young minds for the challenging opportunities in the IT industry with a global awareness rooted in the Indian soil, nourished and supported by experts in the field.

OBJECTIVES

Visualizing on futuristic scenario during the three years Bachelor of Computer Applications, spotlights the era of mass diffusion of computers in IT world.

Six semesters, with one paper in the final semester being an exposure to the real-time project, the course magnifies the minds of the students to explore & push forward, enrich & enable their potential through ample logical reasoning, analytical ability and group discussions to make their way towards developing technical and managerial skills. In order to develop the caliber of each individual, students are trained in logical and lateral thinking to establish them as well-grounded individuals.

Eligibility

Candidate for admission to the first year of the BCA degree course shall be required to have passed the higher secondary examination conducted by the Govt. of Tamil Nadu or other examinations accepted as equivalent.

Duration of the Course

The course spans three years comprising of six semesters with two semesters in one academic year. There will be not less than 90 working days for each semester. Examination will be conducted at the end of every semester.

DISTRIBUTION OF THE MARKS AND CREDITS UNDER CBCS

PART	SUBJECT	No.of Papers	Marks/ Paper	Credits /Paper	Total Credits	Total Marks
I	Language-I Tamil/Malayalam/ Hindi/French	2	100	4	8	200
II	Language- II English	2	100	4	8	200
III	Core Subjects	17	100	4	68	1700
		2	75	3	6	150
	Allied Subjects	4	100	4	16	400
	Elective Subjects	3	100	3	12	300
	Project & Viva Voce	1	Grade	-	-	-
IV	Non Major Elective <u>Elective - I</u> Tamil/Advanced Tamil/NME-I (Yoga/ Women's Rights/ Constitution of India)	2	50	2	4	100
	<u>Elective - II</u> Tamil/Advanced Tamil/NME-I (General Awareness)					
	Skill Based Subjects	4	75	3	12	300
	Environmental Studies	1	50	2	2	50
	Value Education – Ethics & Culture	1	50	2	2	50
V	Extension Activity	1	50	2	2	50
	Add On Course	3	-	-	-	Grade
	Total	43			140	3500

Note: I

@ Includes 25/40 % continuous assessment marks for theory and practical subjects respectively.

\$ In core subjects both theory and practical should be included wherever applicable.

No Continuous Internal assessment for these subjects

No Continuous Internal assessment for these subjects and no end semester Examinations

(Evaluation is based on the performance of Case study/field work...)

!! The Evaluation of extension activities will be based on NSS/NCC/SPORTS

The following parameters are considered throughout study period.

- i) Regularity of Attendance
- ii) Active participation in classes/Campus/Games (College/District//University)
- iii) Exemplary awards/certificates/prizes
- iv) Other Social Components (Blood Camp, Fine Arts etc)

CMS COLLEGE OF SCIENCE & COMMERCE, COIMBATORE - 641 049**(Autonomous)****BACHELOR OF COMPUTER APPLICATIONS****SCHEME OF EXAMINATION - CBCS PATTERN**

(For the students admitted from the academic year 2015 onwards)

Part	Sub code	Subject	Ins.hrs/ week	Examinations				
				Dur. in hrs	CIA	ESE	Total marks	Credit
Semester - I								
I	11T/H/M /F	Language - I	6	3	25	75	100	4
II	12E	English - I	6	3	25	75	100	4
III	13A	Core I - C Programming	4	3	25	75	100	4
III	13B	Core II - Digital Fundamentals and Computer Organization	4	3	25	75	100	4
III	13P	Core III - Programming Lab I (C)	3	3	40	60	100	4
III	1AA	Allied I - Business Accounting	5	3	25	75	100	4
IV	11FC	Environmental Studies	2	3	-	50	50	2
Semester - II								
I	21T/H/M /F	Language - II	6	3	25	75	100	4
II	22E	English - II	6	3	25	75	100	4
III	23A	Core IV - Programming in C++	4	3	25	75	100	4
III	23B	Core V - Data Structures	4	3	25	75	100	4
III	23P	Core VI - Programming Lab II (C++ and DS)	4	3	40	60	100	4
III	2AA	Allied II: Mathematics-I	4	3	25	75	100	4
IV	2FCB	Value Based Education - Ethics and culture	2	3	-	50	50	2

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Part	Sub code	Subject	Ins.hrs/ week	Examinations				
				Dur. in hrs	CIA	ESE	Total marks	Credit
Semester - III								
III	33A	Core VII - JAVA programming	6	3	25	75	100	4
III	33B	Core VIII - Software Engineering	6	3	25	75	100	4
III	33P	Core IX - Programming lab III (Java)	6	3	40	60	100	4
III	3AA	Allied III: Mathematics II	5	3	25	75	100	4
IV	SSS1	SKILL BASED SUBJECT I - Software Testing-I	4	3	20	55	75	3
		Tamil/ Advanced Tamil or Non-major Elective I -(Women Studies)	2	3	-	50	50	2
		&Add on Course - I (Business English)	1	-	-	-	Grade	-
Semester - IV								
III	43A	Core X - Relational Database Management Systems	5	3	25	75	100	4
III	43B	Core XI -Operating system	5	3	25	75	100	4
III	43C	Allied IV : Computer Networks	4	3	25	75	100	4
III	43D	Elective I:	4	3	25	75	100	4
III	43P	Core XII- Programming Lab IV-(ORACLE)	5	3	40	60	100	4
IV	SSS2	SKILL BASED SUBJECT II - Software Testing Lab I	4	3	30	45	75	3
		Tamil/ Advanced Tamil or Non-major Elective II - (General Awareness)	2	3	-	50	50	2
		&Add on Course-II (Life Education)	1	-	-	-	Grade	-

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(For the students admitted from the academic year 2015 and onwards)

Part	Sub code	Subject	Ins.hrs/week	University examinations				
				Dur. in hrs	CIA	ESE	Total marks	Credit
Semester - V								
III	53A	Core XIII - .NET Technologies - I	6	3	25	75	100	4
III	53B	Core XIV - Information security	6	3	20	55	75	3
III	53C	Elective II -	6	3	25	75	100	4
III	53P	Core XV-Programming Lab V - .Net LAB	6	3	40	60	100	4
III	SSS3	SKILL BASED SUBJECT III : Software Testing II	5	3	20	55	75	3
		&Add on Course - III (Soft Skills)	1	-	-	-	Grade	-
III	53V	Project and Viva Voce	-	3	-	-	Grade	-
Semester - VI								
III	63A	Core XVI - Compiler Design	5	3	20	55	75	3
III	63B	Core XVII - Client Server Techniques	5	3	25	75	100	4
III	63C	Core VIII - .Net Technologies - II	6	3	25	75	100	4
III	63D	Elective III -	4	3	25	75	100	4
III	63P	Core XXI - Programming lab VI (.Net technologies - II)	6	3	40	60	100	4
IV	SSS4	SKILL BASED SUBJECT IV - Software Testing lab II	4	3	30	45	75	3
V		Extension Activities	-	-	-	-	50	2
Total							3500	140

LIST OF GROUP ELECTIVE PAPERS

List of Elective Papers		
Elective - I	A	Web Design
	B	Advanced Database
	C	Grid Computing
Elective - II	A	Data Mining
	B	Data Warehousing
	C	Cloud Computing
Elective - III	A	Android Programming
	B	Software Project Management
	C	Software Quality Assurance

Course	Bachelor of Computer Applications						
Subject Code	13A	Subject Title	Core I - C Programming			Semester	I
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 onwards		Credits				4
Objective & Subject Description		To enable the students to learn the concepts about looping constructs, arrays, pointers, strings and files in C programming. On successful completion of this subject the students should have the ability to write programs in C.					

UNIT - I

Introduction to C: Structure of a C program. The Declarations: Character Set - Keywords - Identifiers - Constants - Variables - Data Types - Declaring and Initializing Variables - Type Conversion. Operators and Expressions. Input and Output in C.

UNIT- II

Decision Statements: *if* Statement - *if - else* statement - nested *if - else* statement - *Break, continue, goto* statement - *Switch* statement. Loop Control statements: The *for* loop and nested *for* loop - The *while* loop - the *do - while* loop.

UNIT - III

Arrays: Introduction- Array Initialization - Definition of Array - Characteristic of Array - One Dimensional arrays - Two Dimensional arrays - Multi dimensional arrays. Working with Strings & Standard Functions.

UNIT - IV

Pointers: Introduction - Features of Pointers - Pointer Declaration - Arithmetic operations with pointers. Functions: Introduction - Definition and Declaration of Function - return statement - types of functions - Call by value and reference -Function with operators, arrays and pointers - Recursion.

UNIT - V

Storage class. Preprocessor Directives. Structures and Union: Introduction - Features of structures - Declaring and initialization of Structure - Structure within structure - Arrays of Structures - pointer to structure - structure and function -Unions - union of structure. File: Introduction - Streams and file types - file operations - file I/O - command line arguments.

Text Book:

1. Ashok N Kamthane - Programming with Ansi and Turbo C, Pearson Education Publication, Fourth Edition,2008.

Reference Books:

1. E.Balagurusamy - Programming in Ansi C, TATA McGraw Hill Publication, Third Print, Fourth Edition, 2008.
2. Dr.P. Pandiaraja, S Viswanathan - Programming in C, Printers & Publishers, Pvt. Ltd., First Edition, 2005.
3. Ajay Mittal - Programming in C A Practical Approach, Pearson Education Publication, First Edition, 2010.
4. Al Kelley, Iran Pohl - A Book on C Programming, Pearson Education Publication, Fourth Edition, 2009.

Course	Bachelor of Computer Applications						
Subject Code	13B	Subject Title	Core II : Digital Fundamentals and Computer Organization		Semester	I	
Internal Max:	25	External Max :	75	Total Marks	100	Hr. / Week	4
For the Batch	2015 onwards		Credits			4	
Objective & Subject Description	On successful completion this subject promotes basics of digital electronics and professionally educated in basic elements of computer components.						

UNIT - I

Number Systems: Decimal Number System – Binary Number System – Conversion of decimal to binary and binary to decimal conversions. Complements: 1’s complement and 2’s complement Number representation. Binary addition, Binary subtraction, Binary addition and subtraction using Complement Systems.

UNIT - II

Logic Gates: Gates Classifications: Basic Gates (AND, OR, NOT), Universal Gates (NAND, NOR), Exclusive Gates (XOR, XNOR) (except circuit diagrams) – Logic Symbols, Logic Operators, Logical expression and truth table of Basic, Universal and Exclusive gates. Conversion of Universal Gates to Basic Gates.

UNIT - III

Boolean Algebra & Simplifications: Boolean Theorems (Rules & Verification with sample values only) – reduction of expression using Sum of product Simplification – reduction of expression using Product of Sum Simplification – The K- Map method: 2 variable maps, 3-variables map and 4-variable map.

UNIT - IV

Arithmetic Circuits & Combination Circuits: Half adder – Full adder – Half Subtractor – Full – Parallel binary adder, decimal adder (BCD adder) - Encoder – Multiplexers – De-Multiplexers (Block Diagram, Truth Table, Circuit Diagram of above devices).

UNIT - V

Storage elements & Counters: Flip – Flops types: RS, Clocked RS, Positive Edge triggered-RS, D-Flip Flop, T-Flip Flop, JK-Flip Flop (Block Diagram, Truth Table, Circuit Diagram and Working Methodology). Counter: Ripple Counter, Modulo N Counter – Shift registers-types: PIPO (Parallel-in-Parallel-out), PISO (Parallel-in-Serial-out), SISO (Serial -in-Serial-out), and SIPO (Serial-in-Serial-out).

Text book:

1. R K GAUR, Digital Electronics and Microcomputers, 3rd edition, Dhanpat Rai Publications (P) Ltd.

Reference Book:

1. Morris Mano, Computer System Architecture, 3rd edition, PHI.

Course	Bachelor of Computer Applications						
Subject Code	13P	Subject Title	Core III - Programming Lab I (C)			Semester	I
Internal Max:	40	External Max :	60	Total Marks	100	Hr./Week	3
For the Batch	2015 onwards		Credits				4

LIST OF PRACTICALS

Unit I : Demonstrate the usage of operators and data types in C

1. Write a program to print the size of all the data types supported by C and its range.
2. Write a program to convert the temperature from Fahrenheit to Centigrade and vice versa ($F=1.8 \times C+32$; $C=(F-32)/1.8$).

Unit II: demonstrate the concept of if, if-else, while, do-while, for loops

1. Write a program to find greatest of three given numbers
2. Write a program to print first N prime numbers.

Unit III: demonstrate the concept of arrays and strings

1. Write a program to sort the given set of values of an array
2. Write a program to find number of palindromes in a given sentence.

Unit IV: demonstrate the usage of functions and pointers

1. Write a program to find the factorial value of a given number N using recursive function Call.
2. Write a function to swap two numbers using pointers

Unit V : Case Studies:

1. Create a structure to store the following details:

Rollno., Name, Mark1, Mark2, Mark3, Total, Average, Result and Class.

Write a program to read Rollno., Name and three subject marks. Find out the total, result and class as follows:

- a) Total is the addition of three Subject marks
- b) Result is pass if all subject marks greater than or equal to 40 else "Fail".
- c) Class will be awarded for students who have cleared 3 subjects
 - i) Class "Distinction" if average ≥ 75
 - ii) Class "First" if average lies between 60 to 74.
 - iii) Class "Second" if average lies between 50 & 59.

2. Develop a pay slip for an employee using file with the fields Eno, Ename, Basic. Calculate DA= 32% of Basic. HRA = 15% of Basic. PF=15% of Basic and print all details with Netpay.

Course	Bachelor of Computer Applications						
Subject Code	23A	Subject Title	Core IV - Programming in C++			Semester	II
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 onwards		Credits				4
Objective & Subject Description	This subject provides an introduction to Object oriented Programming using C++ programming language. On successful completion of this subject the students will learn Object Oriented Features and C++ well.						

UNIT - I

The Object Oriented Approach- Characteristics of Object Oriented Language-C++ and C- Output using cout-Input using cin-Objects and Classes-A simple class- C++ objects as physical objects-C++ objects as data types- Constructors-Destructors-Objects as function arguments-the default copy constructor-Returning objects from functions- Classes ,objects and memory-Static class data-**const** and classes.

UNIT - II

Arrays as class member data-Array of objects-Operator overloading: Overloading unary operators-the *operator* keyword-Operator arguments-Operator return values-Nameless temporary objects-Overloading binary operators-Arithmetic operators-Concatenating strings-Multiple overloading-Comparison operators-Arithmetic assignment operators-The subscript operator-Data conversion-Conversions between basic types-Conversion between objects and basic types-conversion between objects of different classes-Pitfalls of operator overloading and conversion.

UNIT - III

Inheritance:Derived class and Base class-Specifying the derived class-Accessing base class members-the protected access specifier-Derived class constructors-Overriding member functions-Class hierarchies-Public and private inheritance-Levels of inheritance-Multiple inheritance-Ambiguity in multiple inheritance.Pointers:memory management :new and delete-Pointers to objects.

UNIT - IV

Virtual functions: Virtual functions-Normal member functions accessed with Pointers- Virtual member functions accessed with pointers-Late binding-Abstract classes and pure virtual functions-Virtual destructors-Virtual base classes-Friend functions-Static functions-Assignment and copy initialization-the **this** pointer-Dynamic type information.

UNIT - V

Streams and files: Stream classes-Advantages of streams-Stream class hierarchy-the ios class-the istream class-the ostream class- the iostream and withassign classes-stream errors-Disk file I/O with streams- File pointers-Error handling in file I/O-File I/O with member functions-Overloading the extraction and insertion operator. Templates and exception: Function templates-Class templates-Exceptions.

Text Book:

1. Robert Lafore, "Object Oriented Programming in C++", Pearson ,Fourth edition, 2011.

Reference Book:

1. D.Ravichandran "Programming with C++ ",Tata Mc Graw Hill ,3rd edition,2011
2. Tony Gaddis "Starting Out with C++", Pearson Publication, 6th edition,2011.

Course	Bachelor of Computer Applications						
Subject Code	23B	Subject Title	Core V - Data Structures			Semester	II
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	4
For the Batch	2015 onwards		Credits				4
Objective & Subject Description		This subject provides an introduction to various data structures which will be helpful when programs are written. On successful completion of this subject the students will know various data structures and their working methods.					

UNIT - I

Introduction: Algorithmic Specification-Introduction-Recursive Algorithm-Performance analysis-Space complexity-Time complexity-Asymptotic notation-Sparse matrices-Polynomials-Sparse matrices.Stacks and queues: Stacks –stacks using dynamic arrays- Queues- Circular Queues using Dynamic arrays-Evaluation of expressions-Multiple stacks and queues.

UNIT - II

Linked lists: Singly linked lists and chains- Linked stacks and queues- Polynomials- Additional list operations-trees-introduction-binary trees-Binary tree traversals-threaded binary trees-Heaps-Binary search trees-Counting binary trees.

UNIT - III

Graphs: The Graph abstract Data type-definitions-Graph representation-Elementary Graph operation-Depth first search-Breadth first traversal-Connected components-Spanning trees-Biconnected components.Hashing: Introduction- Static Hashing-Dynamic Hashing-

UNIT - IV

Sorting: Motivation-Insertion sort-Quick sort-Merge sort-Merging –Iterative merge sort-Recursive merge sort-heap sort-Sorting on several keys-List and table sorts-External sorting-introduction-k-way merging-buffer handling for parallel operation- run generation- optimal merging of runs.

UNIT - V

Efficient binary search trees:Optimal binary search trees-AVL trees-Red black trees-Definition-Representation of a Red Black tree-Searching aRed black tree-inserting into aRed Black tree-Deletion from aRed Black tree-Joining Red Black trees.B trees: Definition and properties-Number of elements in aB tree- Insertion into Black trees- Deletion from B tree.

Text Book:

1. Horowitz,Sahni,Anderson-freed-“Fundamentals of Data structures in C” ,Universities Press,Second edition,2008

Reference Book:

1. Trembly Sorenson, “Data structures”,Tata Mc Graw Hill ,2rd edition,1997

Course	Bachelor of Computer Applications						
Subject Code	23P	Subject Title	Core VI – Programming Lab II (C++ and DS)			Semester	II
Internal Max:	40	External Max :	60	Total Marks	100	Hr./Week	3
For the Batch	2015 onwards		Credits				4

List of Practicals (C++)

- 1.C++ program for class concept an object creation,constructor,destructor .
2. C++ Program for Arithmetic assignment operator overloading.
- 3.C++ program for inheritance concept.
- 4.C++ program for static members and class.

Case study 1: For implementing friend class, friend function

List of Practicals (Data Structures)

1. Implement a stack using static and dynamic representations.
2. Implement linked list.
3. Implement selection sort
4. Implement quick sort

Case study 2: Binary search tree , heap sort implementation.

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PART	SUBJECT	No of Papers	Marks @	Credits
I	Language - I Tamil /Malayalam/Hindi/French	2	200	8
II	Language - II English	2	200	8
III	Core Subjects	19 \$	1900	76
	Allied Subjects	4	400	16
	Project	1	250	10
IV	1 - Non-Major Elective Elective - I Tamil/Advanced Tamil/ Communicative English	2	100 #	4
	Elective - II Tamil/Advanced Tamil/ General Awareness			
	2 - Skill Based Subjects	4	300	12
	3 - Environmental Studies	1	50 #	2
	4- Value Based Education - Ethics and culture	1	50 #	2
	Add on Courses	3	Grade ##	
V	Extension Activities	-	50 !!	2
	Total	39	3500	140

Note: I

@ Includes 25/40 % continuous assessment marks for theory and practical subjects respectively.

\$ In core subjects both theory and practical should be included wherever applicable.

No Continuous Internal assessment for these subjects

No Continuous Internal assessment for these subjects and no end semester Examinations

(Evaluation is based on the performance of Case study/field work...)

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II	12E	English - I	6	3	25	75	100	4
III	13A	Core I - C Programming	4	3	25	75	100	4
	13B	Core II - Digital Fundamentals and Computer Organization	4	3	25	75	100	4
	13P	Core III - Programming Lab I (C)	3	3	40	60	100	4
	1AA	Allied I - Business Accounting	5	3	25	75	100	4
IV	11FC	Environmental Studies	2	3	-	50	50	2
Semester - II								
I	21T/H/M /F	Language - II	6	3	25	75	100	4
II	22E	English - II	6	3	25	75	100	4
III	23A	Core IV - Data Structures	6	3	25	75	100	4
	23P	Core V - Programming Lab II (DS using C)	5	3	40	60	100	4
	2AA	Allied II: Mathematics-I	5	3	25	75	100	4
IV	2FCB	Value Based Education - Ethics and culture	2	3	-	50	50	2

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Part	Sub code	Subject	Ins.hrs/ week	Examinations				
				Dur. in hrs	CIA	ESE	Total marks	Credit
Semester - III								
III	33A	Core VI - Multimedia	5	3	25	75	100	4
	33B	Core VII - Programming in C++	6	3	25	75	100	4
	33P	Core VIII-Programming Lab III-(C++)	6	3	40	60	100	4
	3AA	Allied III: Mathematics II	5	3	25	75	100	4
IV	SSS1	SKILL BASED SUBJECT I - Open Source System	5	3	20	55	75	3
		Tamil/ Advanced Tamil or Non-major Elective I -(Women Studies)	2	3	-	50	50	2
		&Add on Course - I (Business English)	1	-	-	-	Grade	-
Semester - IV								
III	43A	Core IX - Programming with Visual Basic	6	3	25	75	100	4
	43B	Core X - Relational Database Management Systems	5	3	25	75	100	4
	43P	Core XI- Programming Lab IV-(VB & RDBMS)	6	3	40	60	100	4
	4AA	Allied IV: Computer Networks	6	3	25	75	100	4
IV	SSS2	SKILL BASED SUBJECT II - PHP Lab I	4	3	30	45	75	3
		Tamil/ Advanced Tamil or Non-major Elective II - (General Awareness)	2	3	-	50	50	2
		&Add on Course-II (Life Education)	1	-	-	-	Grade	-

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Part	Sub code	Subject	Ins.hrs/week	University examinations				
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Semester - V								
III	53A	Core XII – System Analysis and Design	5	3	25	75	100	4
	53B	Core XIII – VB.Net	6	3	25	75	100	4
	53C	Core XIV – Operating System	5	3	25	75	100	4
	53P	Core XV-Programming Lab V – VB.Net LAB	5	3	40	60	100	4
	53E	Core XVI – Information security	5	3	25	75	100	4
	SSS3	SKILL BASED SUBJECT III : Programming in ASP.Net	3	3	20	55	75	3
		&Add on Course – III (Soft Skills)	1	-	-	-	Grade	-
Semester - VI								
III	63A	Core XVII – Client Server Techniques	5	3	25	75	100	4
	63B	Core XVIII – Java Programming	5	3	25	75	100	4
	63P	Core XIX – Programming Lab VI – Java Lab	5	3	40	60	100	4
	63V	Project & Viva Voce	12	3	-	250	250*	10
IV	SSS4	SKILL BASED SUBJECT IV – ASP.Net Lab	3	3	30	45	75	3
V		Extension Activities	-	-	-	-	50	2
Total							3500	140

Project Report- 200 Marks*Viva-voce-50 Marks**

Course	Bachelor of Computer Applications						
Subject Code	33A	Subject Title	Multimedia			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	5
For the Batch	2014Onwards		Credits				4
Objective & Subject Description		The objective is to demonstrate how still images, sound, and video can be digitized on the computer. The students in this course will create their own multimedia programs using software tools, Formulate a working definition of interactive multimedia, demonstrate competence in using the authoring multimedia program and demonstrate the use of animation, digitized sound, video control, and scanned images.					

UNIT - I

What is Multimedia : Definitions - CD ROM, DVD and Multimedia - CD ROM , DVD, Flash Drives and Multimedia - Where to use Multimedia : Multimedia in Business - Multimedia in School - Multimedia in Home - Multimedia in Public Places - Virtual Reality . Introduction to Making Multimedia: Stages of Project - Software - Hardware - Creativity - Multimedia Skills: Video specialties, Audio Specialties

UNIT - II

Text : Power of Meaning - About font and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Designing Tools - Hypermedia and Hyper text.

UNIT - III

Sound: The power of sound - Multimedia system sounds - digital audio - Making MIDI Audio - Audio File Formats - MIDI Versus Digital Audio - Adding Sound to Multimedia Project - Music CDs - Production Tips.

Images : Before start to create: Plan , Organize tools, Multiple monitors - Making still image - Color - Image file formats.

UNIT - IV

Animation: The power of motion - Principles of Animation - Animation by computer - Making animations that work. Video : Using Video - How video works - Analog Display Standards - Digital Display standards - Digital Video - Video Recording and Tape formats - Shooting and Editing Video - Optimizing Video files.

UNIT - V

Basic Software Tools: Text editing and word processing tools - OC Software - Painting and Drawing Tools - Image Editing Tools - Sound Editing Tools - Animation, Video and Digital Movie Tools. Multimedia Authoring Tools: Type of Authoring Tools - Card and Page based Authoring Tools - Icon and Object based authoring tools - Time based Authoring tools.

Text Book:

1. Tay Vaughan, Multimedia : Making it work, Tata McGraw Hill Edition, Seventh Edition, 2013.

Reference Book:

1. Ranjan Parekh, Principles of Multimedia, Tata McGraw-Hill Education, 2013.
2. Ralf Steinmetz, KlaraNahrstedtm, Multimedia Computing, Communications & Applications, Pearson Education Singapore Pvt.Ltd, First Edition. 2002.

Course	Bachelor of Computer Applications						
Subject Code	33B	Subject Title	Programming in C++			Semester	III
Internal Max:	25	External Max :	75	Total Marks	100	Hr / Week	6
For the Batch	2014Onwards		Credits				4
Objective & Subject Description		This subject deals with the programming concepts of Object Oriented Programming using C++.On successful completion of this subject the students should have writing programming ability on OOPS concepts.					

UNIT - I

Introduction to OOP - Elements of OOP.C++ programming basics: basic program construction - preprocessor directives -comments - character variables - input and output with cin and cout -setw manipulators -type conversions - arithmetic operators. Loops and decisions: for, while, do loops - if, if, else, switch-case, conditionaloperator statements - break, continue and goto statements.

UNIT - II

Functions: simple functions - passing arguments to functions - returning valuesfrom functions - reference arguments - overloaded functions - inline functions - default arguments. Objects and classes: simple class - C++ objects as data types - constructors - objects asfunction arguments - returning objects from functions.

UNIT - III

Arrays: Array fundamentals - arrays as class member data - arrays of objects -Strings: string variables - finding, modifying and comparing string objects. Operator overloading: Overloading unary operators - overloading binaryoperators.Inheritance: derived class and base class - access specifiers (public, private,Protected) - derived class constructors - overriding member functions - class hierarchies- types of inheritance.

UNIT - IV

Pointers: addresses and pointers - pointers and arrays - new and delete operators- pointer to objects.Virtual functions: virtual member function accessed with pointers - late binding. Friend functions:friends for functional notation-friend classes. Static functions -Thethis pointer.

UNIT - V

Files and streams: Stream classes - formatted file I/O - character I/O - Object I/O - file pointers- Introduction to templates.Case study: employee details and payroll maintenance system.

Text Book:

1. Robert Lafore,Object oriented programming in MicrosoftC++, GalgotiaPublications Pvt. Ltd, 4th Edition, 2011.

Reference Book:

1. Ashok N.Kamthane, Object Oriented Programming WithAnsi& Turbo C++, Pearson Education Ltd,2008.
2. E.Balaguruswamy,Object Oriented programming with C++, Tata McGraw Hill,Third Edition. 2008.

Course	Bachelor of Computer Applications						
Subject Code	33P	Subject Title	Programming Lab III - C++			Semester	III
Internal Max:	40	External Max :	60	Total Marks	100	Hr / Week	6
For the Batch	2014 onwards		Credits				4

LIST OF PRACTICALS

1. Write a C++ program to display the prime number from 1 to 100.
2. Write a C++ program to sort a set of numbers in ascending order.
3. Write a C++ program to set a number of precision point to display the following format


```
*
*
* *
* * *
* * * *
```
4. Create a class to implement the data structure stack. Write a constructor to initialize the top of the stack to 0. Write a member function push() to insert an element and a member function pop() to delete an element. Check for overflow and underflow conditions.
5. Create a class mat which has a 2-d matrix where &c represents the rows and columns of the matrix. Overload the operators +, -, * to add, subtract and multiply the matrices. Write member functions to get and display mat object values.
6. Create a class string. Write member functions to initialize get and display strings. Overload the operator + to concatenate two strings, = to compare two strings and a member function to find the length of the string.
7. Create a class which consists of employee details like eno, ename, dept, basicsalary, and grade. Write member functions to get and display them. Derive a class pay from the above class and write a member functions to calculate da, hra, pf, depending on the grade and display the payslip in a neat format using console I/O.
8. Create a class shape which consist of two virtual functions cal_area () and cal_peri to calculate area and perimeter of various figures using pointers. Derive three classes square, rectangle and triangle from the class shape and calculate area and perimeter of each class separately and display the result.
9. Write a program to overload binary operator + using friend function.
10. Write a C++ program to calculate the length of two distance using structures and display the feet and inches.(Format as feet ' - inches ")
11. Write a program to create an object using constructor and release them using destructor.
12. Create a class ARITH which consist of a FLOAT and INTEGER variables to perform arithmetic operations on it. Write member functions ADD(), SUB(), MUL(), DIV(), MOD() to perform addition, multiplication, division, and modulus respectively. Write member functions to get the input values and display the resultant values.
13. Write a program to display a multiplication table. Use the function named userfun() for formatting using commands like setw() ,show point, show pos, precision().
14. Write a program to perform insertion, deletion and updation using files.
15. Write a program which takes a file as arguments and copies into another file with line numbers using command line arguments.

Course	Bachelor of Computer Applications						
Subject Code	SSS1	Subject Title	Skill Based Subject I: Open Source System			Semester	III
Internal Max:	20	External Max :	55	Total Marks	75	Hr./Week	5
For the Batch	2014 Onwards		Credits				3
Objective & Subject Description	This course presents the introduction to open source tools and enable the students to understand the concepts of PHP AND MYSQL.						

UNIT - I

PHP Introduction: History-unique features-basic development concepts. Using variables & operators: storing data in variables-understanding PHP'S data types-using constants-manipulating variables with operators.

UNIT - II

Controlling program flow: if,if-else,if-elseif-else, switch case, while, do while, for loop, combiningloops, Interrupting and skipping loops, Working with string & numeric functions: using string functions, using numeric functions.

UNIT - III

working with arrays : storing data in arrays – processing arrays with loops and iterators-using arrays with forms-working with array functions-working with date and time-creating user defined functions: Creating and invoking functions-using arguments and return values-setting default argument values-using dynamic argument lists-understanding variable scope-using recursive functions.

UNIT - IV

Creating Classes: Introducing classes and objects-defining and using classes-using advanced OOP concepts-using constructors and destructors-extending classes-adjusting visibility settings-working with files and directories: reading local file-remote file-specific segments of a file-writing files-processing directories-performing other file and directory operations.

UNIT - V

Working with databases and SQL: Introducing databases and SQL-understanding databases, records and primary keys-understanding relationships and foreign keys-understanding SQL statements-creating database-adding tables-adding records-Securing PHP: Sanitizing Input and Output-securing data-securing database access-securing sessions-validating user Input: working with required fields, working with numbers, working with strings-working with dates

Text Book:

1.VikramVaswani - PHP: A beginner's guide, Tata Mcgraw Hill, First edition,2010.

Reference Book:

- 1.Matt Doyle – Beginning PHP 5.3,Wiley India pvt. Ltd.,First edition,2010.
- 2.Steve Suehring, Tim Converse, Joyce Park – PHP 6 and MySQL 5,Wiley India pvt. Ltd,First Edition,2010.

Course	Bachelor of Computer Applications						
Subject Code		Subject Title	Add on Course I: Business English			Semester	III
Internal Max:	-	External Max :	-	Total Marks	Grade	Hr./Week	1
For the Batch	2014 Onwards		Credits				-
Objective & Subject Description		On successful completion of this subject, the students should know the basics of communication, grammar, listening & speaking and writing skills. This subject introduces oral and written communication concepts from basic to advanced levels.					

UNIT - I

Communication: What is Communication? Listening skills: Definition – Types of listening – Tips for effective listening.

UNIT - II

Telephone Skills: Basics of telephone communication – Telephone courtesy.

UNIT - III

Writing Skills: Standard business letter – Report writing.

UNIT - IV

Career Skills: Applying for jobs – Cover letters - Interviews.

UNIT - V

Soft Skills: Empathy – Intrapersonal skills – Interpersonal intelligence.

Text Book:

1. Bharathiar University, Communication Skills – A multi skill course, Macmillan publishers Indian Ltd., 2011.

Reference Books:

1. Paul J. PhD Donoghue and Mary E Siegel, Are you Listening? Keys to successful Communication. Indiana, Sorin Books, 2005.
2. Apple Books, Effective Communication, Apple publishing International (P) Ltd., 2011.

Course	Bachelor of Computer Applications						
Subject Code	43A	Subject Title	Programming with Visual Basic			Semester	IV
Internal Max:	25	External Max :	75	Total Marks	100	Hr. / Week	6
For the Batch	2014Onwards		Credits				4
Objective & Subject Description	This subject deals Visual Basic concepts.To inculcate knowledge on Programming and Project Development using Visual Basic.						

UNIT - I

Getting started with Visual Basic: Introduction to Visual basic 6.0 programming environment - working with forms - Developing an application - variables , data types, constants, - visual basic built in functions.

UNIT - II

Working with controls: Creating and using controls - working with control Arrays. Menus, Mouse Events and Dialog boxes: Introduction - Mouse events - Dialog Boxes.

UNIT - III

Graphics, MDI and Flex Grid: Graphics for Application - Multiple Document Interface(MDI) - using the Flex Grid control - Procedures and control structures - Arrays in visual basic.

UNIT - IV

Open Database Connectivity (ODBC): - Using ODBC with Dao-Accessing ODBC databases using data control-using DBGrid control-adding, updating and deleting records-using the remote data control-Remote Data Objects - ADO Object Model.

UNIT - V

Data environment designer: accessing data using data environment, connection object, command object, using SQL query designer- Data Report: using the data report object, methods of the data report object, creating an hierarchical report.
Case study - Railway reservation system, Payroll system.

Text Books:

1. Content Development Group, Visual Basic 6 Programming, TMH Publishers, 2008.

Reference Books:

1. Gary Cornell "Visual Basic 6From the Ground Up" Tata McGraw Hill Edition,2008.
2. Steven Holzner et. al, "Visual Basic 2005 Black Book", Published by Dream Tech,2006.

Course	Bachelor of Computer Applications						
Subject Code	43B	Subject Title	Relational Database Management Systems			Semester	IV
Internal Max:	25	External Max :	75	Total Marks	100	Hr / Week	5
For the Batch	2014 Onwards		Credits				4
Objective & Subject Description	This subject deals with RDBMS concepts using PL/SQL.Knowledge on PL/SQL Programming techniques.To inculcate knowledge on RDBMS concepts and Programming with PL/SQL.						

UNIT - I

Introduction: Database - purpose of database systems - view of data - data models - database languages - database users and administrators - database system structure.

UNIT - II

E R model: Basic concepts - Mapping constraints - keys - Entity Relationship diagram -weak entity sets - Extended ER features.

UNIT - III

Relational model: Structure of relational databases - Basic Structure - Database schema - Keys - Query languages - The relational algebra - Fundamental operations - Select, Project, Union, Set difference - Cartesian product - Rename - Additional operations - set intersection, natural join, division, assignment operation.

UNIT - IV

Relational database design: Pitfalls in Relational database design -Decomposition - Normalization using functional dependencies. Object oriented databases - New database applications - The object oriented data model - Object oriented languages.

UNIT - V

Oracle - Introduction - SQL: Create, drop, alter tables - rename and truncate table - describe table - simple select statements - order by, group by clauses - Sub queries - Creating views - Expanding the view -Date functions. Changing data with insert, update, merge and delete. PL/SQL: Overview -block structure - data types - variable declarations - control structures-procedures and functions - triggers.

Case study: College administration system, Banking system.

Text Book:

1. Silberschatz, Korth and Sudharshan, Database system concepts, McGraw Hill publications, 5th edition, 2006.
2. Oracle database 10g - The Complete reference - Tata McGraw Hill publications Pvt. ltd, 2006.

Reference Book:

1. Rajesh Narang, "Database management systems", Rajesh Narang, Prentice Hall of India, 2006

Course	Bachelor of Computer Applications						
Subject Code	43P	Subject Title	Programming Lab IV (VB &RDBMS)			Semester	IV
Internal Max:	40	External Max :	60	Total Marks	100	Hr./Week	6
Forthe Batch	2014 onwards		Credits				4

LIST OF PRACTICALS

Visual Basic

1. Simple program to develop a Calculator.
2. Design a form using common dialog box to display the font, save, open a Dialog box.
3. Design a form to convert decimal numbers into octal and hexadecimal.
4. Car Animation Program.
5. Draw points on a form at random with red, blue and green colors.
6. Design a form to display the digital clock.
7. Develop project for payroll system.
8. Develop a project for students information system.

RDBMS

1. Create the following table (PK - Primary Key, FK - Foreign Key) cat_head,route_head, place_head,route_detail, ticket_detail, ticket_headwiththemapping given below:
 - cat_headroute_head
(cat_code PK) (cat_code FK)
 - route_headroute_detail
(route_id PK) (route_id FK)
 - ticket_headticket_detail
(tick_no PK) (tick_no FK)
 - place_headroute_detail
(place_id PK) (place_id FK)
 - (i) Alter the table ticket_header to add a check constraint on ticket_no to accept values between 1 and 500.
 - (ii) Alter table route_header to add a column with data type as long.
 - (iii) Insert values to above tables.
 - (iv) Display only those routes that originate in madras and terminate at cochin.
2. (i) Display only distinct category code from the table route_header in descendingmanner.
(ii) Update the above table route_header to set the distance between madras and Coimbatore as 500.

- (iii) Update the above table route_header to set the distance between Coimbatore and Nilgris as 80.
 - (iv) Select rows from ticket_details such that ticket number greater than any ticket_number in Ticket_header.
 - (v) Select rows from route_header such that the route_id are greater than all route_id in route_detail where place id is "100".
3. Write PL/SQL Block to prepare the electricity bill.
 4. Splitting the table : Write a PL/SQL block to split the students information table into two, one with the passed and the other with failed
 5. Joining the tables - Write a PL/SQL block to join two tables, first table contains roll number, name, total and second table contains the roll number and address.
 6. Write a recursive function to find Factorial of N
 7. Write a Database trigger for checking the input value of a mark which must not be less than 0 and greater than 100.

Course	Bachelor of Computer Applications						
Subject Code	4AA	Subject Title	Computer Networks			Semester	IV
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	6
For the Batch	2014 onwards		Credits				4
Objective & Subject Description	On successful completion of the course the students should have, Understood the use of computer networks and the functions of network layers. This course presents the Introduction to computer networks, the physical layer, Data link layer, network layer, Session layer.						

UNIT - I

Introduction: Use of computer networks: Business Applications - Home Applications - Mobile Users. Network Hardware: LAN - WAN - MAN - Wireless - Home Networks. Network Software: Protocol Hierarchies - Design Issues - Connection Oriented and Connectionless Services. References Models: OSI Reference Model - TCP/IP Reference Model - Comparison of OSI and TCP/IP - Critique of OSI Protocols - Critique of TCP/IP Reference Model.

UNIT - II

Physical Layer - Guided Transmission Media: Magnetic Media - Twisted Pair - Coaxial Cable - Fiber Optics. Wireless Transmission: Electromagnetic Spectrum - Radio Transmission = Microwave Transmission - Infrared and Millimeter Waves - Light Waves. Communication Satellites: Geo-Stationery Satellites - Medium Earth Orbit Satellites - Low Earth Orbit Satellites - Satellites versus Fiber - Public Switched Telephone System - Structure of Telephone System.

UNIT - III

Data Link Layer: Data Link Layer Design Issues - Services Provided to The Network Layer - Framing. Error Detection and Correction: Error Detecting Codes - Error Correcting Codes. Elementary Data Link Protocols: Unrestricted Simplex Protocol - Simplex Stop and Wait Protocol - Simplex Protocol For Noisy Channel. Sliding Window Protocol: 1 Bit Sliding Window Protocol.

UNIT - IV

Network Layer: Design Issues: Store and Forward Packet Switching - Services Provided to the Transport Layer - Implementation of Connectionless Service - Implementation of Connection Oriented Service - Comparison of Virtual Circuit And Datagram Subnets. Routing Algorithms: Optimality Principle - Shortest Path Routing - Flooding - Distance Vector Routing - Link State Routing - Hierarchical Routing - Broadcast Routing - Multicast Routing - Distant Vector Routing.

UNIT - V

Transport Layer: Services Provided to the Upper Layers - Transport Service Primitives - Elements of Transport Protocols - Addressing - Connection Establishment and Connection Release. DNS (The Domain Name System): The DNS Name Space - Resource Records - Name Servers.

Text Book:

1. Andrew S. Tanenbaum, Computer Networks, Prentice hall India Pub, Fourth Edition, 2005.

Reference Books:

1. Douglas E. Comer, Computer Networks & Internets with Internet Applications, Pearson Education, Fourth Edition, 2008.
2. William Stallings, Data and computer communications, PHI, seventh edition, 2000.

Course	Bachelor of Computer Applications						
Subject Code	SSS2	Subject Title	Skill Based Subject II : PHP Lab			Semester	IV
Internal Max:	30	External Max :	45	Total Marks	75	Hr./Week	4
For the Batch	2014 Onwards		Credits				3

LIST OF PRACTICALS

1. Write a PHP program to find whether a given number is Armstrong or not.
2. Write a PHP program to implement all arithmetic operations.
3. Write a PHP program to display the different format of time.
4. Write a PHP program to change the background of the calendar.
5. Write a PHP program to convert Dollars to Rupees.
6. Write a PHP program to find factorial of a number.
7. Write a PHP program to find whether a given number is prime or not.
8. Write a PHP program to calculate GCF and LCM.
9. Write a PHP program to connect the student information with SQL.
10. Write a PHP program to connect the employee details with MYSQL.
11. Write a PHP program to display patient details in a hospital.
12. Write a PHP program to display book details in a library.
13. Write a PHP program to display the count of persons who visited the current page.
14. Design a login authentication system using PHP.
15. Design an online resume submission form using PHP.

Course	Bachelor of Computer Applications						
Subject Code	-	Subject Title	Add on Course II (Life Education)			Semester	IV
Internal Max:	-	External Max :	-	Total Marks	Grade	Hr./Week	1
For the Batch	2014 Onwards		Credits				-
Objective & Subject Description	To make students aware of yoga for health, human values, to face challenges and to manage stress at bay. Helps to learn moral values to students.						

UNIT - I

Family: Introduction - Family in the changing society - Indian joint family: Dimensions and issues - will joint family survive?

UNIT - II

Learning and forgetting: Significance and meaning - Definition - Kinds and elements of memory - Intelligence of memory - Signs of good memory - Measuring memory or retention - Significant facts regarding remembering and forgetting - Memory development and improvement.

UNIT - III

Diverse Issues: Instincts - Sentiments - will - Habits - Character - Play and play way Education - Sex Education.

UNIT - IV

Mental hygiene and mental health: Introduction - Aims and objectives - Common characteristics of a mentally healthy person - Mental disorders - Defense mechanism.

UNIT - V

Drug Abuse and Addiction: Different causes of drug addiction - Prevention and treatment - Drug abuse scenario.

Text Books :

1. Krishna Chakraborty, Family in India, Rawat publications, 2002.
2. J C Aggarwal, Essentials of Educational Psychology, Vikas Publishing House Pvt. Ltd, 2002.
3. Baljit Singh Virk, Addiction to alcohol and other drugs, Indian Publishers and Distributors delhi, 2002.

Reference Books :

1. Ishwarmodi, Human values & social changes, Rawat publications, 2000.
2. S.K Sarangi, Values and Ethics of Profession And Business, Asian Book Private Ltd, 2004.

CMS COLLEGE OF SCIENCE & COMMERCE

(AUTONOMOUS)

(Affiliated to Bharathiar University)

An ISO 9001: 2008 Certified Institution and Re-accredited at the

'A' level with a CGPA of 3.53 out of 4 by NAAC

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III Bachelor of Computer Applications (BCA)

SCHOOL OF COMPUTER SCIENCE

SYLLABUS

SCHEME OF EXAMINATION (CBCS)

2013 Onwards

SCHOOL OF COMPUTER SCIENCE

REGULATIONS

INTRODUCTION

Applications of computer are one of the thrust areas in science and technology. In appreciation of its growing importance in business and visualizing the career prospects. The curriculum of this course is framed with theoretical concepts in computer applications and the students are capable of meeting the ever-changing challenges, having earnestly qualified themselves to be well ahead of time in the IT world.

The training imparted aims to prepare young minds for the challenging opportunities in the IT industry with a global awareness rooted in the Indian soil, nourished and supported by experts in the field.

OBJECTIVES

Visualizing on futuristic scenario during the three years Bachelor of Computer Applications, spotlights the era of mass diffusion of computers in IT world.

Six semesters, with one paper in the final semester being an exposure to the real-time project, the course magnifies the minds of the students to explore & push forward, enrich & enable their potential through ample logical reasoning, analytical ability and group discussions to make their way towards developing technical and managerial skills. In order to develop the caliber of each individual, students are trained in logical and lateral thinking to establish them as well-grounded individuals.

Eligibility

Candidate for admission to the first year of the BCA degree course shall be required to have passed the higher secondary examination conducted by the Govt. of Tamil Nadu or other examinations accepted as equivalent.

Duration of the Course

The course spans three years comprising of six semesters with two semesters in one academic year. There will be not less than 90 working days for each semester. Examination will be conducted at the end of every semester.

DISTRIBUTION OF THE MARKS AND CREDITS UNDER CBCS

PART	SUBJECT	No of Papers	Marks @	Credits
I	Language - I Tamil /Malayalam/Hindi/French	2	200	8
II	Language - II English	2	200	8
III	Core Subjects	19 \$	1900	76
	Allied Subjects	4	400	16
	Project	1	250	10
IV	1 - Non-Major Elective Elective - I Tamil/Advanced Tamil/ Communicative English	2	100 #	4
	Elective - II Tamil/Advanced Tamil/ General Awareness			
	2 - Skill Based Subjects	4	300	12
	3 - Environmental Studies	1	50 #	2
	4- Value Based Education - Ethics and culture	1	50 #	2
	Add on Courses	3	Grade ##	
V	Extension Activities	-	50 !!	2
	Total	39	3500	140

Note: I

@ Includes 25/40 % continuous assessment marks for theory and practical subjects respectively.

\$ In core subjects both theory and practical should be included wherever applicable.

No Continuous Internal assessment for these subjects

No Continuous Internal assessment for these subjects and no end semester Examinations

(Evaluation is based on the performance of Case study/field work...)

!! The Evaluation of extension activities will be based on NSS/NCC/SPORTS

The following parameters are considered throughout study period.

- i) Regularity of Attendance
- ii) Active participation in classes/Campus/Games (College/District//University)
- iii) Exemplary awards/certificates/prizes
- iv) Other Social Components (Blood Camp, Fine Arts etc)

CMS COLLEGE OF SCIENCE & COMMERCE, COIMBATORE - 641 049**(Autonomous)****BACHELOR OF COMPUTER APPLICATIONS
SCHEME OF EXAMINATION - CBCS PATTERN**

(For the students admitted during the academic year 2013 onwards)

Part	Sub code	Subject	Ins.hrs/week	Examinations				
				Dur. in hrs	CIA	ESE	Total marks	Credit
Semester - I								
I	11T/H/M /F	Language - I	6	3	25	75	100	4
II	12E	English - I	6	3	25	75	100	4
III	13A	Core I - C Programming	4	3	25	75	100	4
	13B	Core II - Digital Fundamentals and Computer Organization	4	3	25	75	100	4
	13P	Core III - Programming Lab I (C)	3	3	40	60	100	4
	1AA	Allied I - Business Accounting	5	3	25	75	100	4
IV	11FC	Environmental Studies	2	3	-	50	50	2
Semester - II								
I	21T/H/M /F	Language - II	6	3	25	75	100	4
II	22E	English - II	6	3	25	75	100	4
III	23A	Core IV - Data Structures	6	3	25	75	100	4
	23P	Core V - Programming Lab II (DS using C)	5	3	40	60	100	4
	2AA	Allied II: Mathematics-I	5	3	25	75	100	4
IV	2FCB	Value Based Education - Ethics and culture	2	3	-	50	50	2

CMS COLLEGE OF SCIENCE & COMMERCE, COIMBATORE - 641 049**(Autonomous)****BACHELOR OF COMPUTER APPLICATIONS****SCHEME OF EXAMINATION - CBCS PATTERN**

(For the students admitted during the academic year 2013 onwards)

Part	Sub code	Subject	Ins.hrs/ week	Examinations				
				Dur. in hrs	CIA	ESE	Total marks	Credit
Semester - III								
III	33A	Core VI - Multimedia	5	3	25	75	100	4
	33B	Core VII - Programming in C++	6	3	25	75	100	4
	33P	Core VIII-Programming Lab III-(C++)	6	3	40	60	100	4
	3AA	Allied III: Mathematics II	5	3	25	75	100	4
IV	SSS1	SKILL BASED SUBJECT I - Open Source System	5	3	20	55	75	3
		Tamil/ Advanced Tamil or Non-major Elective I -(Women Studies)	2	3	-	50	50	2
		&Add on Course - I (Business English)	1	-	-	-	Grade	-
Semester - IV								
III	43A	Core IX - Programming with Visual Basic	6	3	25	75	100	4
	43B	Core X - Relational Database Management Systems	5	3	25	75	100	4
	43P	Core XI- Programming Lab IV-(VB & RDBMS)	6	3	40	60	100	4
	4AA	Allied IV: Computer Networks	6	3	25	75	100	4
IV	SSS2	SKILL BASED SUBJECT II - PHP Lab I	4	3	30	45	75	3
		Tamil/ Advanced Tamil or Non-major Elective II - (General Awareness)	2	3	-	50	50	2
		&Add on Course-II (Life Education)	1	-	-	-	Grade	-

CMS COLLEGE OF SCIENCE & COMMERCE, COIMBATORE - 641 049**(Autonomous)****BACHELOR OF COMPUTER APPLICATIONS****SCHEME OF EXAMINATION - CBCS PATTERN**

(For the students admitted during the academic year 2013 and onwards)

Part	Sub code	Subject	Ins.hrs/week	University examinations				
				Dur. in hrs	CIA	ESE	Total marks	Credit
Semester - V								
III	53A	Core XII – System Analysis and Design	5	3	25	75	100	4
	53B	Core XIII – VB.Net	6	3	25	75	100	4
	53C	Core XIV – Operating System	5	3	25	75	100	4
	53P	Core XV-Programming Lab V – VB.Net LAB	5	3	40	60	100	4
	53E	Core XVI – Information security	5	3	25	75	100	4
	SSS3	SKILL BASED SUBJECT III : Programming in ASP.Net	3	3	20	55	75	3
		&Add on Course – III (Soft Skills)	1	-	-	-	Grade	-
Semester - VI								
III	63A	Core XVII – Client Server Techniques	5	3	25	75	100	4
	63B	Core XVIII – Java Programming	5	3	25	75	100	4
	63P	Core XIX – Programming Lab VI – Java Lab	5	3	40	60	100	4
	63V	Project & Viva Voce	12	3	-	250	250*	10
IV	SSS4	SKILL BASED SUBJECT IV – ASP.Net Lab	3	3	30	45	75	3
V		Extension Activities	-	-	-	-	50	2
Total							3500	140

Project Report- 200 Marks*Viva-voce - 50 Marks**

Course	Bachelor of Computer Applications						
Subject Code	53A	Subject Title	System Analysis and Design			Semester	V
Internal Max:	25	External Max :	75	Total Marks	100	Hr. / Week	5
For the Batch	2013 Onwards		Credits				4
Objective & Subject Description	To Analyze and Design the system and to implement their plans. Introduces the concepts of the system development life-cycle, skills of analysis stage and design stage of software.						

UNIT - I

System Concepts and the Information Systems Environment: Introduction-Systems Concept: Definition - Characteristics of a System - Elements of a system - Types of Systems.

UNIT - II

The System Development Life Cycle - Introduction - consideration for candidate systems - prototyping. The Role of System Analyst: Multifaceted Role of the Analyst - Systems Planning and the Initial Investigation: Bases for Planning in system Analysis - Strategies for Determining the User's Information Requirements.

UNIT - III

Information Gathering: Information Gathering tools - The Tools of Structured Analysis: DFD - Data Dictionary.

UNIT - IV

Feasibility Study: Feasibility Considerations - Steps in Feasibility Analysis - The process and stages of Systems Design: The process of Design -Design methodology - Structured Design - Input/Output and Forms Design: Input Design - Input Data - Output Design - Form Design - Classification of Forms.

UNIT - V

System Testing and Quality Assurance: Types of System Tests - Quality Assurance - Software Maintenance - Procedure for Hardware/Software Selection- Evaluation Process.

Text Book :

1. Elias M.Awad, System Analysis and Design, Galgotia Publication ,Second Edition,2006.

Reference Book:

1. Jeffrey A.Hoffer, Joey F.George, Joseph S. Valacich, Prabin K. Panigrahi, Modern Systems Analysis and Design,Pearson Publication, Fourth Edition, 2006.

Course	Bachelor of Computer Applications						
Subject Code	53B	Subject Title	VB.NET			Semester	V
Internal Max:	25	External Max :	75	Total Marks	100	Hr. /Week	6
For the Batch	2013 Onwards		Credits				4
Objective & Subject Description	This course presents concepts of .Net Framework and VB.NET programming. On successful completion the students should have understood the Principles of .NET framework and to develop VB.NET applications.						

UNIT - I

Introduction to VB.net - .net framework& CLR-System namespace-class library-building VB.net application- IDE environment.

UNIT - II

Data types - constants - variables- operators - program flow control statements - procedures - functions-Msgbox() functions, inputbox() functions –built in dialog box-creating MDI application.

UNIT - III

Textbox - Button - Label-Link label - Checkbox- Radio button -Group box - Timer- Horizontal and Vertical scrollbar - Picture Box-List box - Combo box - Track bar - Rich text box - Tree View - List View.

UNIT - IV

Data access with ADO.NET: What are Databases - datasets - accessing data with server- Accessing data with data adapter and datasets- working with ado.net - overview of ado.net objects using server explorer - Creating dataset- populating dataset- Data provider- Displaying data in data grid.

UNIT - V

File handling-Using file Stream Class-File Mode - File Access-File Share-File stream class- Stream Writer - Stream Reader-Binary Reader- Binary Writer-Directory class - File class. Case study: Payroll, Loan analysis.

Text Book:

1. Visual Basic .Net programming Black Book, Para glyph press, third edition, 2009.

Reference Book :

1. Shirish, Chavan, "Visual Basic .Net", Pearson Education, 4th Edition, 2004.
2. "Visual Basic.Net programming Bible" bill evjen, Jason Beres et al., 2007.

Course	Bachelor of Computer Applications						
Subject Code	53C	Subject Title	Operating System			Semester	V
Internal Max:	25	External Max :	75	Total Marks	100	Hr. / Week	5
For the Batch	2013 Onwards		Credits				4
Objective & Subject Description	This Subject deals with the Operating Systems concepts. On Successful Completion of this subject the students should have understood the Concepts, Process, Dead Locks, and Files.						

UNIT - I

Introduction: What is an operating system? Early history-open systems- Unix, Ethical issues. Hardware- Software- Firmware.

UNIT - II

Process concepts: Definition - States - Transitions- suspend and Resume-semaphore. Deadlock and indefinite postponement-examples of deadlocks- four necessary conditions for deadlock-prevention- banker's algorithm - detection and recovery.

UNIT - III

Storage Management: Real storage -storage management strategies - contiguous Vs noncontiguous storage allocation. Virtual storage organization: Basic concepts- paging - segmentation. Job and processor Scheduling: Levels - priorities-FIFO, RR, Quantum size, SJF,SRT,HRN.

UNIT - IV

Distributed computing: Pipelining-loosely coupled Vs Tightly Coupled systems - Why Disk Scheduling - characteristics - seek optimization - rotational optimization - system considerations disk caching. File and database systems: The file system-functions - data hierarchy - blocking and buffering - file organization- queued and basic access method -allocating and freeing space-backup and recovery.

UNIT - V

Case study: MSDOS: Early history - version 1.0,2.0,3.0 - users view, systems view, programmers view of MS-DOS - DOS 4.0 - Future of MS DOS and OS/2.Unix: History - shell - kernel - file system -process management - memory management.

Text Book:

1. Harvey M. Deitel, An Introduction to operating systems, Addison Wesley, Pearson publication, Second edition, 2005.

Reference Books:

1. A. S. Godbole, Operating Systems, Tata Mcgraw Hill publishing company limited, Second edition 2005.
2. Saiberschatz A. Peterson J. L. Galvan P, Operating System Concepts, Addison, Sixth Edition, Wesley Publishing Co., 2002.

Course	Bachelor of Computer Applications						
Subject Code	53P	Subject Title	Programming Lab V - VB .Net Lab			Semester	V
Internal Max:	40	External Max:	60	Total Marks	100	Hr./Week	5
For the Batch	2013 Onwards		Credits				4

LIST OF PRACTICALS

1. Write a console application to create a function to show the difference in passing arrays using byval and byref arguments.
2. Write a console application to create a procedure to calculate the sum of array elements using Param Array arguments.
3. Write a console application using namespaces.
4. Develop window applications to change the back colors of the form using horizontal Scroll Bars.
5. Develop window applications to use Message Box and Input Box functions.
6. Develop a window application for a notepad.
7. Develop a window application for a simple calculator.
8. Write a window application to create a car animation using timer control.
9. Write a window application to display a digital clock.
10. Write a window application to create a MDI form to display the child form in different style.
11. Write a window application program to create menu bar with sub menus and its type.
12. Write a program to perform the status bar panel and progress bar control.
13. Write a program for creating and reading text file.
14. Develop a window application to process student marks (using basic controls).
15. Develop a window application to process for employee payroll system (Using basic controls).

Course	Bachelor of Computer Applications						
Subject Code	53E	Subject Title	Information Security			Semester	V
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	5
For the Batch	Credits					4	
Objective & Subject Description	On successful completion of the course the students will understand the Information security concept.						

UNIT -I

Information storage and Communication - Information Storage - Purpose of Storage - Types of Storage Devices - File Organization - Internal File Structure - External File structure and File Extensions - Data Communication - an Overview - What is Data Communications - signals - Basic Data Communication Model - Modulation Techniques - Summary.

UNIT II

Introduction to E-Commerce - Introduction - The Elements of commerce - Building an E-commerce site -who stands to Gain - who Stands to lose - Security Threats to E-commerce - client Threats - Communication channel Threats - Server Threats - Implementing Security (Life cycle) - Security Engineering Life Cycle - Security Requirements - Security policy - Security Infrastructure - Testing E-commerce security - Compliance checking - penetration Testing - Ecommerce Infrastructure - E-Governance - Electronic payments - Electronic Tokens - Electronic or Digital cash - Electronic cheques - Electronic Publishing - Summary.

UNIT III

Cryptographic systems - Introduction - Cryptographic System Types - Symmetric cryptography - Asymmetric or public key ,cryptography - Hash function - why three Encryption Techniques - public key Algorithms - RSA public key Algorithm - Digital signature s- Diffie-hellman - ElGamal -cyber laws and ethics - introduction to cybercrime - prevention - preventive step for individual - preventive steps for organizations and Government - How to protect the Computer Against Threat's - Detection - Cyber Laws - Legal Issues involved in E-Commerce - Summary.

UNIT -IV

Indian IT Act and Ethical Issues - Indian IT Act - Ethical Issues in IT - Types of Ethical Issues in I.T - Intellectual property Rights and Ethical Issues - Copy Rights and Ethical Issues - Ethical Hacking and Ethical Issues - plagiarism - Software privacy and Ethics - Summary - Information security Framework - Information security and privacy - Security Framework - Information systems security framework - Framework for network security .

UNIT -V

Access control Techniques - Computer security and Access control - Access control Techniques - Biometrics Authentication -Authentication Token - Token types and usages - Digital signature - Embodiments and vendors - Related Authentication Technologies - Computer Forensics - cases study - Information security in Defense - Information security in Banking.

Text Book:

1. Pankaj Agarwal, "Information Security & Cyber Laws" Acme Learning Private Limited, First Edition, 2010.

Reference Book:

1. Amy Rose, Deborah Arrand, Kristin E.Ohlim, Malloy, Michael G.Solomon, Mike Chapple , "Information Security Illuminated", Jones & Barlett Publishers, 2005.

Course	Bachelor of Computer Applications						
Subject Code	SSS3	Subject Title	Skill Based Subject III - Programming In ASP.Net		Semester	V	
Internal Max:	20	External Max :	55	Total Marks	75	Hr. / Week	3
For the Batch	2013 Onwards		Credits			3	
Objective & Subject Description	This course presents the concepts of .Net Framework and ASP.NET programming. On successful completion the students should have understood the Principles of .NET framework and to develop ASP.NET applications.						

UNIT - I

Introduction to ASP.net - .net framework- CLR-Common type system -.net framework class library- IDE environment- application state – session state-view state.

UNIT - II

Control class-Web control class – label – textbox – list box – dropdown list – view control-tree view control – sitemap path control – creating static menu – dynamic menu – ad rotator control – xml control.

UNIT - III

Base Validator class - Validation Controls- Required Field Validators-Comparison Validator-Range Validator- Regular Expression Validator- Custom Validators – Validation Summary- using menu class: menu control-menu display properties-menu styles.

UNIT - IV

ADO.net –entity framework-Data binding using data bound controls- sql data source - Working with data Grid view control- Working with details view control- form view control.

UNIT - V

Introduction to web service- Infrastructure of asp.net web service-code model of asp.net web service – asp.net Ajax and web service – securing web service. Case study: online reservation system ,banking system.

Text Book:

1. ASP.Net Black Book Published by Dream Tech Press, 3rd edition, 2009.

Reference Book:

1. ASP.Net Complete Reference Published by McGraw-Hill Companies, 4th edition, 2002.

Course	Bachelor of Computer Applications						
Subject Code		Subject Title	Add on Course III: Soft Skills			Semester	V
Internal Max:	-	External Max :	-	Total Marks	Grade	Hr./Week	1
For the Batch	2013 Onwards		Credits				-
Objective & Subject Description		On successful completion of this subject, the students should have understood H.C.M and L.C.M of numbers, decimal fractions, goal setting and its importance, time management matrix and stress management, group Discussion. Helps students learn numerical & analytical abilities, goals, GD.					

UNIT - I

Soft Skills: Introduction – What are soft skills? – Importance of soft skills – Soft skills: social, thinking, negotiating – Exhibiting your soft skills – Identifying, improving and training your soft skills.

UNIT - II

Know Thyself/Self-Discovery: Introduction – Importance of knowing yourself –Process of knowing yourself – SWOT analysis – Benefits of SWOT analysis – Using SWOT analysis – SWOT analysis grid – Questions to complete the grid.

UNIT - III

Career panning: Introduction – Benefits of career planning – Guidelines for choosing a career – Myths about choosing a career – Tips for successful career planning – Developing career goals – Final thoughts on career planning.

UNIT - IV

Group Discussion: Introduction – Meaning of GD - Why GD? – Tips on GD – Types of GD – Skills required in GD – Consequences of GD – Behavior in a GD – Essential elements of GD – Different characters in GD.

UNIT - V

Interview skills: - Introduction – Why an interview? – Types of Interview – Interview panel - Types of questions asked – Reason for selecting a candidate – Reasons for rejecting a candidate – On the day of interview – On to the interview table.

Text Books:

1. Dr.K.Alex, Soft Skills-Know Yourself and Know the World, S.Chand & Company Ltd, 2011.

Reference Book:

1. Shiv Khera, You can win, Macmillan publishers India Pvt.Ltd,2011.
2. Priyadarshipatnaik, Group Discussion & Interview Skills, Cambridge University Press India Pvt.Ltd, 2011.

Course	Bachelor of Computer Applications						
Subject Code	63A	Subject Title	Client Server Techniques			Semester	VI
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	5
For the Batch	2013 Onwards		Credits				4
Objective & Subject Description	This subject deals with the overview of client/server computing, client/server application development and production environments.						

UNIT - I

Basic concepts of Client/Server - The client/server computing era - What is client/server - File server- Database servers - Transaction servers- Groupware servers - Object servers - web servers- Middleware. Client/server building blocks - Operating system services - Base services - Extended services - server scalability - Remote procedure calls - Multiservers.

UNIT - II

SQL database servers - What does a Database Server Do?:SQL Database server architectures - Stored procedures, Triggers and Rules Client/Server Transaction Processing: The ACID Properties - Transaction Models.TP Monitors: Managing client/server Transactions: TP Monitors.

UNIT - III

Data warehouses: Information Where you want it: What is OLTP - What is Decision Support System (DSS) - Comparing Decision - Support System(DSS) and OLTP System - The Data warehouse: What is Data warehouse - The elements Data warehousing - Ware House Hierarchies: The Data Marts. EIS/DSS: Query Reporting Tools - OLTP and Multidimensional Data.

UNIT - IV

Client Server Groupware: Why is Groupware Important? - What is Groupware? - The component of Groupware - Client/Server with Distributed ?Objects: Distributed objects and components: What Distributed object promise - From Distributed Object to components - 3 tier Client/Server Object Style.

UNIT - V

Web Client/Server - The interactive Era: 3 tier Client/Server, Web Style - HTML 2.0's web based forms CGI: the server side of the web - Web security.

Text Book:

1. Robert Orfali, Dan Harkey&Jeri Edwards-The Essential Client / Server Survival GuideGalgotia Publication Private Limited, Second Edition, 2008.

Reference Books:

1. Patrick Smith, Steve Guenferich- Client / Server Computing, PHI, Second Edition, 2007.
2. Dawana Travis Devire- Client / Server Computing , Tata MacGraw Hill, Second Edition, 2008.

Course	Bachelor of Computer Applications						
Subject Code	63B	Subject Title	Java Programming			Semester	VI
Internal Max:	25	External Max :	75	Total Marks	100	Hr./Week	5
For the Batch	2013 Onwards		Credits				4
Objective & Subject Description	This subject provides principles and basis of Java Programming. On successful completion of the subject the student would understand the concepts of the Java programming and the student can write the java program effectively.						

UNIT - I

Java Evolution: History-Features - How java Differs from C and C++ - Java and internet - Java and World Wide Web - Java support systems - Java environment. Overview: Introduction - Java program Structure - Tokens - Statements - implementing Java program - Java Virtual Machine-Command Line Arguments. Constants, Variables and Data types: Introduction - Constants - Variables - Data Types - Declaration of Variables - Scope of Variables - Type casting.

UNIT - II

Operators and Expressions: Arithmetic, Relational, Logical, Assignment, Increment, Decrement, Special Operators- Evaluation of Expressions. Decision Making and Branching: Simple If statement - if-else statement-Nesting of If-else statement - else if Ladder- Switch statement - ? Operator - Decision making and Looping: While - do - for - Jumps in Loops.

UNIT - III

Classes, Objects and Methods: Defining a class -Creating Objects- Accessing Class Members - Constructors - Methods Overloading - Inheritance- Overriding Methods - Visibility control. Arrays: One Dimensional array - Creating an array - Two dimensional arrays - String arrays - Wrapper Classes. Interfaces: Multiple Inheritance-Defining: Extending - Implementing - Accessing Interface Variables.

UNIT - IV

Packages: API Packages - Using System Packages- Naming Conventions- Creating Packages- Accessing a Package- Adding a Class to a Package- Hiding Classes. Multithreaded Programming: Introduction - Creating threads-Extending the Thread class - Life cycle of a thread-Using Thread Methods. Managing Errors and Exceptions: Types of Errors- Exception - Syntax - Multiple Catch - Using Finally-Throwing our own exceptions.

UNIT - V

Applet: Introduction -building Applet Code - Applet life cycle-designing web page-Applet tag-adding Applet to HTML file. Graphics Programming: Graphics Class - Lines, Rectangles, Circles, Ellipses, Arcs, Polygons, Bar charts. Managing Input /Output Files in Java: Concept of Streams - Stream classes -Byte &Character stream classes- creation of Files-Reading/Writing characters and bytes.

Text Book:

1. E.Balagurusamy, Programming with Java – A Primer, Tata McGraw Hill Publication, Third Edition, 2008.

Reference Books:

1. Patrick Naughton and Herbert Schildt, The Complete Reference Java 2x, Tata McGraw Hill Publication, Second edition, 2000.
2. Spell Brett, Java Programming, Shroff Publishers, First edition, 2001.

Course	Bachelor of Computer Applications						
Subject Code	63P	Subject Title	Programming Lab VI - Java Lab			Semester	VI
Internal Max:	40	External Max :	60	Total Marks	100	Hr / Week	5
For the Batch	2013 Onwards		Credits				4

LIST OF PRACTICALS

1. Calculate the factorial of a number using for loop.
2. Write a program to print multiplication table for a given number.
3. Design a program to implement constructors.
4. Write a program to calculate the area of a rectangle using inheritance.
5. Write a program to implement interface.
6. Write a program to import Classes from user defined packages.
7. Write a Java Program to implement the concept of multithreading with the use of any three Multiplication tables and assign three different priorities to them.
8. Write a program to implement Multiple Catch blocks.
9. Write a program to throw our own exception.
10. Write a program that counts the number of lines, words & characters in a given text file.
11. Write a program to create an Applet to draw a several Shapes using Graphics classes.
12. Write a program to create an Applet to draw Smiley.
13. Write a program to create an Applet to draw a Grid Lines
14. Write a program to copy file content to another file.
15. Display the contents of a file using command line arguments.

Course	Bachelor of Computer Applications						
Subject Code	SSS4	Subject Title	Skill Based Subject IV - ASP.Net Lab			Semester	VI
Internal Max:	30	External Max :	45	Total Marks	75	Hr / Week	3
For the Batch	2013 Onwards		Credits				3

LIST OF PRACTICALS

1. Design a web page.
2. Create a college website with using link labels
3. Write a program to find the number of hits in a website.
4. Write an asp.net program using HTML and CSS.
5. Design an online application form using html form class.
6. Create a nested master page.
7. Write a program to upload a file.
8. Write an asp.net program to create a tree view for the web pages.
9. Write an asp.net program to create a site map path.
10. Write an asp.net program to perform validation control.
11. Create a directory class to retrieve the file.
12. Create a text file to read and append a text.
13. Display a data grid using SQL data source.
14. Develop a window application to process student marks (using basic controls).
15. Develop a window application to process for employee payroll system (Using basic controls).