ACADEMIC COUNCIL
BOOKLET – IV
(Master copy)

COMPUTER SCIENCE

THEIVANAI AMMAL COLLEGE FOR WOMEN (AUTONOMOUS)
VILLUPURAM
(Re-Accredited by NAAC with 'A' Grade & ISO 9001:2008 Certified)
30th June 2012

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Computer Science

Computer Applications and ISM

DEPARTMENT OF COMPUTER SCIENCE

PREAMBLE

The course profile for the B.Sc computer science and syllabus for (I-III Semesters), M.Sc (computer science) course profile ,syllabus for 4 semesters and M.Phil course profile ,syllabus for the academic year 2012- 13 are given in the Academic Booklet IV. The syllabi of Major, Allied, NME and Major Optional are also given.

COURSE PROFILE B.Sc. (Computer Science)

Semester	Part	Category	Course Code	Course Title	Contact Hrs/Week	Credit	
						Min	Max
I Semester	Part- I	Language	UTAL103/ UTAL104/ UHIL101/ UFRL101	Tamil/Hindi/French	4	2	3
	Part- II	English	UENL105/ UENL106	Basic English/ Advanced English	4	2	3
	Part-III	Core I	UCSM103	Computer fundamentals and C Language	6	5	5
	Part III	Core Practical I	UCSR103	Programming in C	3	3	3
	Part III	Core Practical II	UCSR104	Office Automation	3	3	3
	Part III	Allied I	UMAA107	Statistical Methods	6	4	4
	Part-IV	Soft Skill			2	1	1
	Part-IV	Value Education			2	1	1
Total					**30**	**21**	**23**
II Semester	Part- I	Language	UTAL203/ UTAL204/ UHIL201/ UFRL201	Tamil/Hindi/French	4	2	3
	Part- II	English	UENL205/ UENL206	Basic English/ Advanced English	4	2	3
	Part-III	Core II	UCSM202	Object Oriented Programming and Data Structures using C++	5	5	5
	Part-III	Core Practical III	UCSR202	Object Oriented Programming and Data Structures using C++ Lab	3	3	3
	Part-III	Allied II	UMAA210	Mathematics for Computer Science	6	4	4
	Part-III	Internship	UCSI201	Summer Internship			1
	Part-IV	Non Major Elective			4	2	2
	Part-IV	Value Education			2	1	1
	Part-IV	Soft Skill	USKS201/ USKS202	Spoken English/Presentation Skills	2	1	1
	Part V	Extension Programme / Physical Education			-	1	2
Total					**30**	**21**	**25**
III Semester	Part- I	Language	UTAL303/ UTAL304/ UHIL301/ UFRL301	Tamil/Hindi/French	4	2	3
	Part- II	English	UENL305/ UENL306	Basic English/ Advanced English	4	2	3
	Part-III	Core III	UCSM302	Java Programming	5	5	5
	Part-III	Core Practical IV	UCSR303	Java Programming	3	3	3
	Part-III	Allied III		Digital Electronics	3	2	2

	Part-III	Allied Practical		Digital Electronics	3	2	2
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Value Education			2	1	1
	Part-IV	Soft Skill	USKS3012	Personality Development	2	1	1
Total					**30**	**21**	**23**
IV Semester	Part- I	Language	UTAL403/ UTAL404/ UHIL401/ UFRL401	Tamil/Hindi/French	4	2	3
	Part- II	English	UENL405/ UENL406	Basic English/ Advanced English	4	2	3
	Part-III	Core IV	UCSM402	Database Management Systems	4	4	4
	Part-III	Core Practical V	UCSR404	Database Management Systems	3	3	3
	Part-III	Allied IV		Microprocessor and its Applications	4	4	4
	Part-III	Allied Practical I		Microprocessor and its Applications	3	3	3
	Part-III	Internship	UCSI401	Summer Internship	4	2	1
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Value Education			2	1	1
	Part-IV	Soft Skill	USKS401	Life Coping Skills	2	1	1
	Part V	Extension Programme / Physical Education			-	-	2
Total					**30**	**22**	**27**
V Semester	Part-III	Core V	UCSM505	Visual Programming	5	5	5
	Part-III	Core VI	UCSM506	Computer System Architecture	4	4	4
	Part-III	Core VII	UCSM507	Operating System	4	4	4
	Part-III	Core Practical VI	UCSR504	Visual Programming	3	3	3
	Part-III	Core Practical VII	UCSR505	Operating System	3	3	3
	Part-III	Allied Optional		-	5	4	4
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Soft Skill	USKS501	Job Skills	2	1	1
Total					**30**	**26**	**27**
VI Semester	Part -III	Core VIII	UCSM605	Web Technology	5	5	5
	Part-III	Core IX	UCSM606	Computer Networks	5	5	5
	Part-III	Core X (Recent Trends in Computer Science)	UCSM607	Recent Trends in Computer Science - Multimedia	5	5	5
	Part-III	Core Practical VIII	UCSR603	Web Technology	3	3	3
	Part-III	Core Project	UCSP601	Project	5	5	5
	Part-III	Core XI	UCSM604	Comprehensive viva voce	-	1	1
	Part-III	Major-Elective	UCS0604/ UCSO605	a) Mobile Technology b) Data warehousing and Data Mining	5	4	4
	Part IV	Soft Skill			2	1	1
Total					**30**	**29**	**31**
Grand Total					**180**	**140**	**155**

Allied Courses offered to other Departments

Class & Major	Semester	Category	Course Code	Course Title	Contact Hrs/Week	Credit
BCom with Computer Appliactions	I	Allied I	UCSA102	Office Automation Tools	3	3
	I	Allied Practical I	UCSR105	Office Automation Tools	3	2
	II	Allied II	UCSA201	Programming in C	3	3
	II	Allied Practical II	UCSR203	Programming in C	3	2
	III	Allied III	UCSA302	Visual Programming	3	3
	III	Allied Practical III	UCSR304	Visual Programming	3	2
	IV	Allied IV	UCSA403	Database Management System	3	3
	IV	Allied Practical IV	UCSR405	Database Management System	3	2
	V	Allied V	UCSA504	Web Designing	3	3
	V	Allied Practical V	UCSR506	Web Designing	3	2
BBA	IV	Allied	UCSA404	Office Automation Tools	3	3
	IV	Allied Practical	UCSR406	Office Automation Tools	3	2
III BA Tamil	V	Allied	UCSA505		6	5
Physics	V	Allied IV	UCSA405	Numerical Methods & Programming in C++	5	5
	V	Allied Practical IV	UCSR407	Numerical Methods & Programming in C++	3	2
B.Com	V	Allied V	UCSA506	Office Automation Tools	3	3
	V	Allied Practical V	UCSR507	Office Automation Tools	3	2
Maths	III	Allied III	UCSA303	Mathematical Programming in C	3	3
	III	Allied Practical III	UCSR305	Mathematical Programming in C	3	2
	IV	Allied IV	UCSA507	Object Oriented Programming using C++	3	3
	IV	Allied Practical IV	UCSA508	Object Oriented Programming using C++	3	2
Economics	VI	Allied VI	UCSA601	Office Automation Tools	3	3
	VI	Allied Practical VI	UCSR604	Office Automation Tools	3	2
Total					74	62

ALLIED OPTIONAL - UG

Semester	Part	Category	Course Code	Course Title	Contact Hrs/week	Credit
V	III	Allied Optional	UCSA508	Visual Programming	3T+2P	4
V	III	Allied Optional	UCSA509	Database Management System [Theory cum Practical]	3T+2P	4
V	III	Allied Optional	UCSA509	Database Management System	3T+2P	4

NON- MAJOR ELECTIVES (UG)

Semester	Part	Category	Course Code	Course Title	Contact Hours/ Week	Credit
II	IV	Non- Major Elective I	UCSE201	Office Automation	2T+2P	2
III	IV	Non- Major Elective II	UCSE301	Programming in C	2T+2P	2
IV	IV	Non- Major Elective III	UCSE402	Multimedia and its Applications	2T+2P	2
V	IV	Non- Major Elective IV	UCSE502	Visual Programming	2T+2P	2
			UCSE503	Web Designing	2T+2P	2

UCSM103 COMPUTER FUNDAMENTALS AND C LANGUAGE

(Replaces the syllabus UCSM101 Programming in C Language found in the Academic council booklet -I)

Semester : I **Credit : 5**
Category : Core I **Hours/Week : 6**
Class & Major : I B.Sc Computer Science **Total Hours : 78**

Objectives:

- To gain knowledge about computer introduction.
- To work with MS-Office for preparing documentation worksheet and presentation.
- To write simple application using C language.

Unit I: **12 Hrs**

Introduction - Evolution of Computers - Generation of Computers – History of Computers - Classification of Computers - The Computer System - Applications of Computers - MS Word 2010: Working with Word 2010 Documents – Working with Text, Tables – Checking Spelling and Grammar – Adding Graphics – Printing a Document - Mail Merge.

Unit II: **12 Hrs**

MS Excel 2000: Working with Excel 2010 - Workbook – Working with Worksheet – Formulas & Function – Inserting Charts – Printing in Excel – Pivot table. MS PowerPoint: Working with PowerPoint – Working with different views – Designing Presentation – Printing in PowerPoint. MS Access: Starting Access – Tables – Queries – Forms – Reports.

Unit III: **16 Hrs**

History of C, Importance of C. C Fundamentals: character set identifiers and keywords- C tokens-data types-constants-variables-declaration-expression statements. Operators and Expression- library function. Data Input and Output statements. Control Statements: if-else, while, do-while, for- Nested control structure-switch-break-continue-comma operator-goto statement.

Unit IV: **20 Hrs**

Functions: definition of function-accessing a function-function prototypes-passing arguments to a function-recursion. Program structure: storage classes-automatic variables-external variables-static-Register variable. Arrays: definition of Array-processing an array-passing arrays to a function-multi dimensional arrays-arrays and string. Pointers: Fundamentals – Pointer declaration – Passing pointer to function – array of pointers.

Unit V: **18 Hrs**

Structure and Unions: definition of structure-processing a structure-user defined data type-structure and pointers-passing structure to functions-self referential structure-unions. Data files: Opening and closing a data file-creating a data file-processing a data file unformatted data file.

Text Books:

- ITL ESL, *Introduction to Information Technology,* Pearson Education, 2005.
- Byron S. Gottfried, "*Theory and Problems of Programming with C*", Tata Mcgraw-Hill Ltd, Second Edition, New Delhi, 2008

Reference books:

- E. Bala Gurusamy , "*Programming in ANSI C*" by, Tata McGraw-Hill, Second Edition, New Delhi,2011.
- Pradip Dey and Ghosh Manas, *"Programming in C"* Oxford University Press USA, 2009.

- Sanjay Saxena , *A First course in computers* ,New Delhi, 2000.

UCSR103 PROGRAMMING IN C -LAB

(Replaces the syllabus UCSR101 Programming in C found in the Academic council booklet -I)

Semester	**: I**	**Credit**	**: 3**
Category	**: Core practical I**	**Hours/Week**	**: 3**
Class & Major	**: I B.Sc Computer Science**	**Total Hours**	**: 39**

Objectives:

- To implement the concepts of the C Programming language.
- To design, build, execute and debug C applications.
- To enable the students to write program using file concepts in C

I. Arithmetic and Trigonometric Operations

1. Solve Quadratic Equations.
2. Solve Taylor' Series for sin, cos and tan.

II. Arrays and functions.

1. Find Maximum and Minimum for the given set of numbers.
2. Perform the operation of Matrix Manipulation.
   a. Addition and Subraction. b. Multiplication c.Transpose.
3. Perform the operations of Searching an element in the given set of elements.
4. Perform the operation of Sorting the set of elements in both ascending and descending order.
5. Perform the operation Recursive and Non-Recursive functions to find
   a. Factorial
   b. Fibonacci
   c. GCD
   d. Permutation and Combination.
6. Perform the String manipulation
   a. Concatenation
   b. Substring replacement
   c. Substring detection
   d. Palindrome.

III. Working with Structure and File

1. Generate mark sheet processing for set of students using Structure

2. Generate Electricity bill processing using Union

UCSR104 OFFICE AUTOMATION -LAB

(Replaces the syllabus UCSR201 Digital & Office Automation found in the Academic council booklet -I)

Semester	**: I**	**Credit**	**: 3**
Category	**: Core practical II**	**Hours/Week**	**: 3**
Class & Major	**: I B.Sc Computer Science**	**Total Hours**	**: 39**

Objectives:

- To develop students with the knowledge of document preparation.
- To enable the student create power point presentation.
- To prepare Excel Work sheet.

MS WORD **9 Hrs**

1. Text Manipulation and Formatting, usage of Spell check, Find and Replace, Numbering & Bulleting
2. Picture Insertion & Alignment, Header & footer
3. Creation of Tables & formatting tables.
4. Creation of mail merge.

MS EXCEL **9 Hrs**

1. Creation of Worksheet & Aligning, editing Data in cell, Borders around cell, Inserting, deleting Rows & Columns, Change of column width & row Width.
2. Excel Function(Mathematical, Date, Time etc.,)
3. Creation of Charts & controlling the Appearance of Chart
4. Pivot Table.

MS POWERPOINT **9 Hrs**

1. Creating, saving, closing Presentation, changing slide Layout
2. Inserting & working with Clip-Arts
3. Applying Transition & animation Effects with Slide show

MS ACCESS **12 Hrs**

1. Creating a Table, Setting a Primary Key, Adding & Deleting Records.
2. Working with Queries
3. Creating Simple Forms & Reports.

MS PROJECT **3 Hrs**

1. Create simple MS PROJECT Application

UCSM202 OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES USING C++

(Replaces the syllabus UCSM301 Object Oriented Programming Using C++ found in the Academic council booklet -II)

Semester : II **Credit : 5**
Category : Core III **Hours/Week : 5**
Class & Major : I B.Sc Computer Science **Total Hours : 65**

Objectives:

- To understand the concepts of object oriented programming.
- To enable the students to write simple application programs using C++.
- To analyze basic concepts of Data Structure.

Unit I: **13 Hrs**

Principles of Object Oriented Programming - Beginning with C++ - Tokens, Expressions and Control Structure - Functions in C++.

Unit II: **14 Hrs**

Classes and Objects - Constructors and Destructor - Operator overloading and Type Conversions - Inheritance.

Unit III: **13 Hrs**

Pointers, virtual functions and polymorphism - Exception Handling

Unit IV: **12 Hrs**

Algorithm: Definition - Asymptotic notations – Stack: operation of stack - Queue: operation of queue - circular queue - tree traversals.

Unit V: **13 Hrs**

Linked List - Sorting: Insertion Sort - Merge Sort - Bubble Sort - Searching: Linear Search - Binary Search.

Text Books

- E. Balagurusamy, *Object-Oriented Programming with C++*, TATA Mc Graw-Hill publishing,2008
- Horowitz, S.Sahini and S.Rajasekaran, "*Data structures using C++",* Galgotia Pub.Pvt., 1998.

Reference Book

- Herbert Schildt, *The Complete Reference C++*, Tata McGraw-Hill Publishing,2003

UCSR202 OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES USING C++

(Replaces the syllabus UCSR301 Object Oriented Programming Using C++ found in the Academic council booklet -I)

Semester	**: II**	**Credit**	**: 3**
Category	**: Core practical III**	**Hours/Week**	**: 3**
Class & Major	**: I B.Sc Computer Science**	**Total Hours**	**: 39**

Objectives:

- To apply the basic concepts of the C++ Programming language to create applications.
- To design, build, execute and debug C++ applications.
- To use variables, arrays, strings, flow control statement, point and disk files in C++ applications

1. Complex Number Addition using Constructor and Destructor.
2. Implement the concept of Friend Function.
3. Implement the concept of Polymorphism.
4. Implement the concept of Inheritance
5. Generate student mark sheet processing implementing Exception Handling and abstract class.
6. Perform basic operation on stack.
7. Perform basic operation on queue.
8. Perform the operation of sorting using Insertion Sort & Quick Sort
9. Perform the operation of searching using Linear and Binary search
10. Perform the Traversals operation in tree.

UCSM302 JAVA PROGRAMMING

(Replaces the syllabus UCSM401 Programming in JAVA found in the Academic council booklet -II)

Semester : III **Credit : 5**
Category : Core IV **Hours/Week : 5**
Class & Major : II B.Sc Computer Science **Total Hours : 65**

Objectives:

- To be able to write Java code in the form of both applications and applets.
- To overview all features of the language and major parts of its associated libraries.
- To enable the students to design webpage.

Unit I: **10 Hrs**

Oops concepts, Introduction to Java: Evolution , Features, How java differs from C,C++, Java in internet , Java tokens, Control Statements , Operators , Java Virtual Machine.

Unit II: **13 Hrs**

Classes , Objects , Constructors – Overloading , Overriding , Inheritance .

Unit III: **14 Hrs**

Thread – Synchronization , Inter thread Communication, Multithreading , Exception Handling.

Unit IV: **13 Hrs**

Interfaces , Packages , JDBC Concepts , Stream I/O.

Unit V: **15 Hrs**

Applets , Events , AWT Components , Layouts , GUI Components.

.

Text Book:

- Herbert Schildt, "Java 2 Complete Reference", Tata McGraw Hill, 4thEdition, 2001

Reference Books:

- Balagurusamy. E., Java *Programming*,Tata McGraw Hill, 2000.
- Cay. S. Horst Mann & Gary Cornell, Core java, Volume I, Seventh Edition, Sun Microsystem Press Java Series, 2006.

UCSR303 JAVA PROGRAMMING - LAB

(Replaces the syllabus UCSR401 Programming in JAVA found in the Academic council booklet -II)

Semester	**: III**	**Credit**	**: 3**
Category	**: Core practical IV**	**Hours/Week**	**: 3**
Class & Major	**: II B.Sc Computer Science**	**Total Hours**	**: 39**

Objectives:

- To be able to write Java code in the form of both applications and applets.
- To overview all features of the language and major parts of its associated libraries.
- To enable the students implementing database concepts.

1. Simple Programs Using Classes And Objects
2. String Manipulation.
3. Implementing Inheritance Concepts With Simple Program
4. Implementing Thread Based Applications & Exception Handling.
5. Application Using Synchronization Such As Thread Based, Class Based And Synchronized Statements.
6. Interfaces and Packages.
7. Working with Frames and Various Controls.
8. Working with Dialogs and Menus.
9. Working with Panel and Layout.
10. Database Creation

UCSA102 OFFICE AUTOMATION TOOLS

(Replaces the syllabus UCSA101 Introduction to Information Technology found in the Academic council booklet -I)

Semester	**: I**	**Credits**	**: 2**
Category	**:Allied I**	**Hours/Week**	**: 3**
Class & Major	**: I UG**	**Total Hours**	**: 39**

Objectives:

- To be introduced to the applications of computers in commerce field
- To understand the concept of office automation
- To learn the basics of computer hardware and software, concept of programming

Unit I: **7 Hrs**

Computer Basics: Introduction – Evolution, Generation & Classification of Computers – Computer system – Application of computers. Information Technology Basics: Information – Technology – IT-Role of IT – IT & Internet – Careers in IT Industry.

Unit II: **8 Hrs**

MS Word 2000: Working with Word 2000 Documents – Working with Text, Tables – Checking Spelling and Grammar – Adding Graphics – Printing a Document. MS Excel 2000: Working with Excel 2000 Workbook – Working with Worksheet – Formulas & Function – Inserting Charts – Printing in Excel.

Unit III: **8 Hrs**

MS Powerpoint 2000: Working with Powerpoint 2000 – Working with different views – Designing Presentation – Printing in Powerpoint. MS Access 2000: Starting Access – Tables – Queries – Forms – Reports.

Unit IV: **8 Hrs**

Internet: Evolution – Basic Internet Terms – Getting connected to Internet – Applications – Data over Internet. Internet Tools: Web Browser – Browsing Internet – Email – Search Engines – Instant Messaging.

Unit V: **8 Hrs**

Emerging Trends in IT: E-commerce – Electronic Data Interchange (EDI) – Mobile Communication – Bluetooth – Global Positioning System – Infra red communication – Smart Card – Imminent Technologies.

Text Book:

- ITL ESL, *Introduction to Information Technology,* Pearson Education, 2005.

Reference book:

- Sanjay Saxena , *A First course in computers* , Second Editon, Vikas Publishing House Pvt.Ltd., New Delhi, 2008.

UCSR105 OFFICE AUTOMATION TOOLS

(Replaces the syllabus UCSR102 Introduction to Information Technology found in the Academic council booklet -I)

Semester	**: I**	**Credits**	**: 2**
Category	**:Allied Practical I**	**Hours/Week**	**: 3**
Class & Major	**: I UG**	**Total Hours**	**: 39**

Objectives:

- To develop students with the knowledge of document preparation.
- To enable the student create power point presentation.
- To understand the knowledge of Databases.

MS WORD **9 Hrs**

1. Text Manipulation and Formatting, usage of Spell check, Find and Replace, Numbering & Bulleting
2. Picture Insertion & Alignment.
3. Creation of Tables & formatting tables.

MS EXCEL **9 Hrs**

1. Creation of Worksheet & Aligning, editing Data in cell, Borders around cell, Inserting, deleting Rows & Columns, Change of column width & row Width.
2. Excel Function(Mathematical, Date, Time etc.,)
3. Creation of Charts & controlling the Appearance of Chart

MS POWERPOINT **9 Hrs**

1. Creating, saving, closing Presentation, changing slide Layout
2. Inserting & working with Clip-Arts
3. Applying Transition & animation Effects with Slide show

MS ACCESS **12 Hrs**

1. Creating a Table, Setting a Primary Key, Adding & Deleting Records.
2. Working with Queries

UCSA202 C PROGRAMMING

(Replaces the syllabus UCSA401 Programming in C found in the Academic council booklet -II)

Semester : II	**Credits : 3**
Category :Allied II	**Hours/Week : 3**
Class & Major : I UG	**Total Hours : 39**

Objectives:

- To use the basic concepts of the C programming language to create computer applications.
- To Design, build, execute and debug C applications.
- To build sufficiently complex computation like predictions and extrapolation.

Unit I: **7 Hrs**

C fundamentals: character set – Identifiers and keywords – data types – constants – variables – declaration – expression – statements.

Unit II: **8 Hrs**

Operators and Expression: arithmetic operators – unary operators – relational and logical operators – assignment operators – conditional operators. Data input and Output statements: getchar and putchar functions – scanf and printf function – more about scanf and printf functions.

Unit III: **8 Hrs**

Control statements: if-else, while, do-while, for-nested control structure – switch – break –continue-comma operator – goto statement. Arrays: definition of array – processing array- passing array to function – multidimensional arrays.

Unit IV: **8 Hrs**

Functions: definition – accessing and function – function prototype –passing argument to a function – recursion. Pointers: Fundamentals – pointer declaration – passing pointer to a function.

Unit V: **8 Hrs**

Structure and Unions: Definition of structure – processing structure – user defined data types- Structure and pointers - passing structure to function – Unions -. Data files: opening and Closing a data file – creating data file – processing a data file.

Text Books:

- Balagurusamy E., *Programming in ANSI C*, Third Edition, TMH Publishers, 2004.
- Ashok N. Kamthane, *Programing in ANSI C and Turbo C*, Pearson Education, 2006.

Reference Books:

- Gottfried,B.S, *Programming with C*, Second Edition, New Delhi, TMH Pub. Co. Ltd., 1996.
- Kanetkar Y., *Let us C*, New Delhi, BPB Pub., 1999.

UCSR203 C PROGRAMMING PRACTICALS

(Replaces the syllabus UCSR402 Programming in C found in the Academic council booklet -II)

Semester : II **Credits : 2**
Category :Allied Practical II **Hours/Week : 3**
Class & Major : I UG **Total Hours : 39**

Objectives:

- To use the basic concepts of the C programming language to create computer applications.
- To Design, build, execute and debug C applications.
- To use variables, arrays, strings, functions and structures.

Lab Exercises:

1. Write a C program to input any 2 numbers and manipulate all arithmetic operations
2. Write a C program to convert Celsius to Fahrenheit and Fahrenheit to Celsius.
3. Write a C program to check whether a given year is leap year or not.
4. Reverse a string & check for palindrome.
5. Fibonacci series.
6. Write a C program to input a number and print whether that number is prime or not
7. Write a C program to perform matrix addition & matrix Subtraction

8. Write a C program to perform matrix multiplication.
9. Write a C program to search a number from the given set of numbers.
10. Write a C program to input a set of numbers and arrange it in ascending order
11. Write a C program to calculate NCR & NPR value using recursion
12. Write a simple C structure program.

UCSA302/UCSA501 VISUAL PROGRAMMING

Semester : III **Credits : 3**
Category :Allied **Hours/Week : 3**
Class & Major : II B.Com(CA) **Total Hours : 39**

Objectives:
To enable the students

- Introduce the concept of windows programming
- Introduce GUI programming using Microsoft Foundation Classes
- Developing for Front-End designing

UNIT – I **8 Hrs**

Customizing a form – Writing a simple program- Tool box- Creating control – Name property- Command button- Access keys- Image control- Text boxes Labels-Message boxes Grid –Editing tools- Variables data types- String number.

UNIT –II **8 Hrs**

Displaying information – Determinate loops, indeterminate loops – conditionals Built in function – Functions and Procedure.

UNIT – III **8 Hrs**

Arrays – List – Sorting and searching record- control arrays- grid control – Project with multiple form – Do events and sub main – Error Trapping.

UNIT –IV **8 Hrs**

VB objects – Dialogue boxes – Common control – Menus – MDI forms- Testing Debugging and Optimization – Working with Graphics**.**

UNIT – V **7 Hrs**

File and handling – File system control – File system objects.

Text Books

- Gary Cornell, Visual Basic 6.0 from the ground up, 31st Reprint, Tata McGraw Hill, New Delhi, 2010.
- Noel Jerke, Visual Basic The complete reference, 28th Reprint, Tata McGraw Hill, New Delhi, 2008.

Reference Book

- Deitel & deitel, T.R. Nieto, visual Basic6, 3rd Edition, Pearson Edition, New Delhi, 2007.

UCSR304/UCSR502 VISUAL PROGRAMMING -LAB

Semester : III	**Credits : 2**
Category : Allied Practical	**Hours/Week : 3**
Class & Major : II B. COM(CA)	**Total Hours : 39**

Objectives:

To enable the students

- Introduce the concepts of windows programming
- Introduce GUI programming using Microsoft Foundation Classes
- Developing for Front- End designing

Visual Programming Lab

1. Building simple application
2. Working with Intrinsic Controls and Active X Controls
3. Application with multiple forms
4. Application with dialogues
5. Application with menus
6. Application using data control
7. Application using format dialogues
8. Drag and Drop events
9. Database management
10. Creating Active X Controls

UCSA303/UCSA402 MATHEMATICAL PROGRAMMING IN C

Semester : III	**Credits : 3**
Category : Allied	**Hours/Week : 3**
Class & Major : II B.Sc Maths	**Total Hours : 39**

Objectives:

To enable the students

- To use the basic concepts of the C programming language to create computer applications.
- To Design, build, execute and debug C applications.
- To build sufficiently complex computation like predictions and extrapolation.

UNIT – I **7Hrs**

C fundamentals: character set – Identifiers and keywords data types – constants variables – declaration – expression statements.

UNIT – II **8 Hrs**

Operators and Expression: arithmetic operators – unary operators – relational and logical operators – assignment operators – conditional operators. Data input and Output statements: getchar and putchar functions – scanf and printf function – more about scanf and printf functions.

UNIT – III **8 Hrs**

Control statement: if else, while, do-while , for-nested control structure – switch – break –continue – comma operator – goto statement. Arrays: definition of array – processing array. Passing array to function – multidimensional arrays – arrays and strings.

UNIT – IV **8 Hrs**

Functions: definition –accessing and function – function prototype – passing argument to a function – recursion. Pointers: Fundamentals – pointer declaration – passing pointer to a function – array of pointers.

UNIT – V **8 Hrs**

Structure and Unions: Definition of structure – processing structure – user defined data types – Structure and pointers – passing structure to function – self referential structure – Unions – Bit wise operations. Data files: opening and Closing a data file – creating data file – processing and data file – unformatted data file.

Text Books

- Ashok N. Kamthane, *Programming in ANSI C and Turbo C*, Third Edition, Pearson Education, New Delhi, 2006.
- Balagurusamy E., *Programming in ANSI C*, Third Edition, TMH Publishers, New Delhi, 2004.

Reference Books

- Byron S. Gottfried, *Theory and Problems of Programming with C*, Second Edition, Tata Mcgraw-Hill Ltd, New Delhi, 2008.
- Pradip Dety and Ghosh Manas, *Programming in C*, Oxford University Press USA, 2009.

UCSR305/UCSR403 MATHEMATICAL PROGRAMMING IN C – LAB

Semester : III **Credit : 2**
Category : Allied Practical **Hours/Week : 3**
Class & Major : II B.Sc Maths **Total Hours : 39**

Objectives:
To enable the students

- Develop programming skills using c language
- Design, build, execute and debug C applications.
- Build sufficiently complex computation like predictions and extrapolation

I string Manipulation 9 Hrs

1. Countinf the no. vowels, consonants, words, shite spaces in a line of text and array of lines.
2. Reverse a string & check for palindrome.
3. Sub string detection, count and removal.

II recursion 12 Hrs

1. ${}^{n}P^{r}$, ${}^{n}C_{r}$
2. GCD of two numbers
3. Fibonacci series
4. Minimum and Maximum of numbers

III Matrix Manipulation 9 Hrs

1. Addition & Subtraction
2. Multiplication
3. Transpose, of a matrix

IV Sorting and Searching 9 Hrs

1. Bubble sort
2. Linear search
3. Binary Search

UCSE202 OFFICE AUTOMATION

Semester : II **Credit : 2**
Category : Non-Major Elective **Hours/Week : 2T+2P**
Class & Major : I UG **Total Hours : 26T+26P**

Objectives:
To enable the students

- Create, modify, delete files, formatting text, pictures and drawing tolls.
- Using Excel functions to create a large worksheet.
- Can maintain data using Access.

UNIT –I **5 Hrs**

Introduction to Computers – History – Functioning of the components – Introduction to Windows – Introduction to Ms Office – Word Basics – Menus, commands, toolbars and their Icons – Formatting tool bars.

UNIT – II **7 Hrs**

Alignment – Changing font ,colors – drawing, inserting pictures – Tables – Templates – Mail merge – Introduction to Macros**.**

UNIT – III **6 Hrs**

Excel basics – Menus, commands, toolbars and Icons – entering & editing formulas in Excel – Excel built in functions – Fill series – Data forms – Working with charts.

UNIT – IV **4 Hrs**

Inserting Clip arts and Pictures – Frame movement of the above – Insertion of new slide – Preparation of Organization Charts – Presentation using Wizards – Usage of design templates.

UNIT – V **4 Hrs**

Data management – Organization of data – Relationship between data types – Producing queries, tables, forms and reports – Producing simple macros.

Lab exercises :

1. Draw a Free hand drawing using all the options in MS Paint
2. Type a letter with neat alignment and format(Using MS Word)
3. Create a Student's Mark statement using table(Using MS Word)
4. Prepare an invitation and send to 10 people using mail merge(Using MS Word)
5. Create a excel sheet to print the list of employees pay bill
6. Create a chart for the above data
7. Write a simple macro program(Using MS Word)
8. Prepare a Power Point presentation about "Computer Generations"
9. Create a table for student' s mark details(Using Ms Access)
10. Design forms and report for that students table(Using MS Access)
11. To manipulate various queries for that queries

Text Books

- Ed Bott, Woody Leonhard, Using Microsoft Office 2007", First Edition, Pearson Education, New Delhi, 2008.
- Ron Mansfield, Working in Microsoft Office, Second Edition Tata McGraw Hill, 2008.

Reference Books

- Ghosh Dastidar, Chattopadhyar and Sarkar, Computers and Computation – A Beginner's Guide, Prentice Hall of India, First Edition, 1999.
- Sanjay Saxena, A First course in Computers, second Edition, Vikas Publishing House Pvt. Ltd., New Delhi, 2008.

UCSE302 PROGRAMMING IN C

Semester : III **Credits : 2**
Category : Non-Major Elective **Hours/Week : 2T+2P**
Class & Major : II UG **Total Hours : 26T+26P**

Objectives:
To enable the students

- Understand the concepts of the C programming language.
- Design, build, execute and debug C applications.
- Apply variables, arrays, strings, flow control statement, point and disk files in C applications.

UNIT – I **5 Hrs**

Fundamentals of Programming – Algorithm & flow diagram – C fundamentals: character set – Identifiers and keywords – data types – constants – variables – declaration – expression – statements. Operators and Expression: arithmetic operators and library function.

UNIT – II **5 Hrs**

Data input and Output statements: getchar and putchar functions – scanf and printf function – more about scanf and printf functions. Control statements: if-else, while, do-while, for nested control structure – switch – break – continue – comma operator – goto statement.

UNIT – III **5 Hrs**

Functions: definition – accession and function – function prototype – passing argument to a function – recursion. Program structure : storage classes – automatic variables – external variables – static variable.

UNIT – IV **5 Hrs**

Arrays: definition of array – processing array – passing array to function – Multidimensional arrays – arrays and strings. Pointers: Fundamentals – pointer declaration – passing pointer to a function – array of pointers.

UNIT – V **6 Hrs**

Structure and Unions: Definition of structure – processing structure – user defined data types – structure and pointers – passing structure to function – self referential structure – Unions – Bitwise operations.

Lab Exercise: **26 Hrs**

1. Write a C program to input any 2 numbers and manipulate all arithmetic operations.
2. Write a C program to convert Celsius to Fahrenheit and Fahrenheit to Celsius.
3. Write a C program to check whether a given year is leap year or not.
4. Write a C program to input a number and print whether that number is prime or not.
5. Write a C program to perform matrix addition.
6. Write a C program to perform matrix multiplication.
7. Write a C program to search a number from the given set of numbers.
8. Write a C program to input a set of numbers and arrange it in ascending order.
9. Write a C program to calculate NCR value using recursion.
10. Write a simple C structure program.

Text Book

- Balagurusamy E., Programming in ANSI C, Third Edition, TMH Publishers, New Delhi, 2004.

Reference Books

- Ashok N. Kamthane, Programming in ANSI C and Turbo C, Third Edition, Pearson Education, New Delhi, 2006.
- Byron S. Gottfried, Theory and Problems of Programming with C, Second Edition, Tata Mcgraw-Hill Ltd, New Delhi, 2008.

UCSE402 PROGRAMMING IN C++

(Replaces the syllabus of UCSE401 found in the Academic Council Booklet – II)

Semester	**: IV**	**Credit**	**: 2**
Category	**: Non-Major Elective**	**Hours/Week**	**: 2T+2P**
Class & Major	**: II UG**	**Total Hours**	**: 26T+26P**

Objectives:

To enable the students

- Analyse the concept of object oriented programming
- Write simple applications using C++
- Understand all file operations

UNIT – I **6 Hrs**

Fundamentals of programming – Algorithm & flow diagram – Principles of procedure oriented programming and object oriented programming – Concepts of OOP – Benefits of OOP – Application of OOP.

UNIT – II **6 Hrs**

Tokens, Expressions and Control Structures, Functions in C++ - Main Function – Function Prototyping – Call by Reference-Return by Reference-Inline Function –Function Overloading.

UNIT – III **6 Hrs**

Classes and Objects-Specifying a Class-Defining member function-Nesting of member function-Arrays within a class-Memory Allocation for objects-Static Data members-Static Member Function-Arrays of Objects-Objects as Function arguments-Friendly Function.

UNIT – IV **7 Hrs**

Constructors and Destructors-Constructors-Parameterized Constructors-Multiple Constructors in a Class-Dynamic Initialization of Objects-Copy Constructor-Dynamic Constructors-Destructors-Operator Overloading and Type Conversions.

UNIT – V **7 Hrs**

Inheritance-Introduction-Defining Derived Classes-Single Inheritance-Making a Private Member Inheritable-Multilevel, Multiple, Hierarchical, Hybrid Inheritance – Virtual Base Classes – Pointers, Virtual Functions and Polymorphism.

Text Books

- E. Balagurusamy, Object-Oriented Programming with C++, Third Edition, Tata McGraw-Hill publishing, New Delhi, 2007.
- Robert Lafore, Object Oriented Programming with C++, Galgotia Publishers, New Delhi, 2002.

Reference Books

- Herbert Schildt, The Complete Reference C++, 4th edition, Tata McGraw-Hill Publishing, New Delhi, 2003.
- Savitch, Problem Solving with C++, Sixth Edition, Pearson Education, New Delhi, 2009.

Lab Exercise: **26 Hrs**

1. Write a program to calculate Simple Interest and Total amount.
2. Write a program to check whether the entered number is Palindrome or not.
3. Write a program to enter a number, Count the number of digits from 0 to 9 occurring from 1 to entered number (Use Classes and Objects).
4. Write a program to exchange values between two classes using Friend Functions.
5. Write a program to find the area of triangle, rectangle and sphere using function overloading.
6. Write a program to define a Constructor and initialize the class data member variables with constants. (Use multiple constructors)
7. Write a program to create an object and release them using Destructors.
8. Write a program to convert integer to date and vice versa using conversion function in Source class.
9. Write a program to perform multiplication using an Integer an Object. (Use Operator overloading)
10. Write a program to create multilevel Inheritance.

UCSE402 MULTIMEDIA AND ITS APPLICATIONS

Semester : IV **Credits : 2**
Category : Non-Major Elective III **Hours/Week : (2T+2P)**
Class & Major : II UG **Total Hours : (26+26)**

Objectives:

- To gain knowledge in Multimedia concepts
- To be able to develop multimedia applications.
- To introduce Photoshop

Unit-I **5 Hrs**

Introduction: What is Multimedia? – Definition - Multimedia applications– Multimedia Skills and Training - Multimedia Hardware - Multimedia Software – Text in multimedia.

Unit-II **7 Hrs**

Audio & Video: Digital audio – sound card – recording techniques – recording software options recording process – editing terminology – editing with windows, cool edit – cool edit – features – audio transformation. Video: Introduction – video shooting – capturing process – post production concepts.

Unit-III **6 Hrs**

Animation & Graphics: Introduction to animation – classifications – developing animation for multimedia project. Graphics: world colours – types of graphic storage – graphic tools – scanning and digital photography – basic attributes of an image – editing concepts – editing operations & manipulations.

Unit-IV **4 Hrs**

Photoshop : Basic Tools: Selection tools – Clone stamp tools – Brush tools – Grids – Scaling images – Moving and merging Layers – Tool Palette – Screen capturing – Grey styling – Using style Palette – Layers: Copying selections – Creating layers – Transforming layers – Copying layers between images – Arranging layers.

Unit-V **4 Hrs**

Blending and Compositing: Opacity and Blending Modes – Feathering Edges – Image Modes: Mode characteristics – Grayscale and Bitmap Modes – Color Modes. Layer Effects - Text, Layer Effects and Filters.

Practicals:

1. Photo Effects. **4 Hrs**

Decolouring, changing cloth texture and pattern, changing background, applying soft light effect.

2. Photo Retouching. **4 Hrs**

a. Color correction, blending images, smooth skin effects adding blur effects to background.

3. Text Effect. **7 Hrs**

Creating metatie text, shining text, illumines text transparent glass text, digital banner.

4. Image Editing. **4 Hrs**

Creating simple images

Editing-Resize, Change color depth, resolution, file format, brightness, add and edit layer style, add text.

5. Image Editing. **7 Hrs**

Stitch and edit two images into single using selection, lasso and alone stamp tools (masking)

Text Books:

- S.Gokul , *Multimedia Magic*, BPB Publications, 2010
- Nick vandome, *Photoshop elements 9, Jumpstrat*, McGraw Hill, Edition,2011.

Reference Books:

- Tay Vaughan, *Multimedia : Making it Work*, Tata McGraw Hill, Fifth Edition,2011.
- Ben Willmore and Dan Ablan, *Adobe Photoshop CS4 Studio Techniques*, Peachpit Publishers, 2008.

UCSE502 VISUAL PROGRAMMING

Semester : V **Credits : 4**
Category : Non-Major Elective **Hours/Week : (2T+2P)**
Class & Major: III UG **Total Hours : (26T+26P)**

Objectives:
To enable the students
Apply the concepts of windows programming.
Understand GUI programming using Microsoft Foundation Classes.
Design simple programming project.

UNIT – I **5 Hrs**

Programming Fundamentals – Algorithm & flow diagram – Customizing a Form – writing simple Programs.

UNIT – II **6 Hrs**

Toolbox – Creating Controls – Name Property – Command Button – Access Keys – Image Controls – Text Boxes – Grid – Editing Tools - variables – Data Types – string – Numbers.

UNIT – III **5 Hrs**

Displaying Information – Determinate Loops – Indeterminate Loops – Conditionals – Built- in Functions and Procedures.

UNIT – IV **5 Hrs**

Lists – Arrays – Sorting and Searching – Records – Control arrays – Combo Boxes – Grid Controls.

UNIT – V **5 Hrs**

Projects with Multiple forms – Do Events and Sub Main – Error Trapping. VB Objects – Dialog Boxes – Common Controls – Menus – MDI Forms.

Lab Exercises:

1. Write a simple program using all arithmetic operations in VB
2. Design a Simple Calculator.
3. Use option and check box to create question bank
4. Use combo box and list box to create a simple application
5. Create VB Application using Image and Picture control

6. Create VB Application using Application using Common dialog Box.
7. Implement String function using Menu control.
8. Create VB Application using Rich Text Box control.
9. Create Color Palette using Slider control and scroll bar
10. Create Student Information using MDI Forms.

Text Books

- Gray Cornell, Visual Basic 6 from the Ground up, 31st Reprint, Tata McGraw Hill, New delhi, 2010.
- Noel Jerke, Visual Basic 6 The Complete Reference, 28th reprint, Tata McGraw Hill, New Delhi, 2008.

Reference Book

- Deitel and Deitel, visual Basic 2005, Third Edition, Pearson Education, New Delhi, 2007

UCSE503 WEB DESIGNING

Semester : V **Credits : 2**
Category : Non-Major Elective IV **Hours/Week : (2T+2P)**
Class & Major : III UG **Total Hours : (26+26)**

Objectives:

- To gain the knowledge of scripting language.
- To use the basic concepts of the HTML to create Web Page
- To use tags, tables, frames, forms, CSS to design Web page

UNIT I: **11 Hrs**

HTML: Introduction – Web Server, Web Client / Web Browser, HTML Tags, HTML commands, Text Formatting, heading Styles, Drawing Lines

UNIT II: **10 Hrs**

Text Styles, Other Text Effects, Lists, types of Lists

UNIT III: **10 Hrs**

Adding graphics to HTML Documents, Tables

UNIT IV: **10 Hrs**

Linking Documents, Frames, Forms

UNIT V: **11 Hrs**

Dynamic HTML: CSS, Class, SPAN tag, Types of Style Sheet

Practicals

1. Design a Web Page using tags of different Heading Styles
2. Design a Web Page using all types of tags

3. Create a Web Page with various Text Styles And effects
4. Create a index of book using list
5. Time table generation using tables
6. Display an image as background for a web page
7. Creating a web page using Frames for Advertisement
8. Design a Bill for shopping mall using Forms
9. Creation of E-Book
10. Creating a web page using External style sheet

Text Book:

- Ivan Bayross, "Web Enabled Commercial Application Development using HTML, DHTML, JavaScript, PERL, CGI, 3 rd edition,2012.

Reference Books :

- The Complete Reference, HTML, Second edition, Thomas A Powell,McGraw Hill,1996
- HTML Black Book, Steven Holzner, Wiley Publication, Second edition, 2002.

COURSE PROFILE: M.Sc. (Computer Science)

Semester	Category	Course Code	Course Title	Contact Hrs/Week	Credit	
					Min	Max
I Semester	Core I	PCSM104	Advanced Java Programming	5	4	4
	Core II	PCSM105	Advanced Computer Architecture & Parallel Processing	5	5	5
	Core III	PCSM106	Advanced Relational Database Management System	5	4	4
	Core Practical I	PCSR102	Advanced Java Programming - Lab	5	3	3
	Core Practical II	PCSR103	Advanced RDBMS - Lab	5	3	3
	Non Major Elective I	PCSE101		5	4	5
Total				**30**	**23**	**24**
II Semester	Core IV	PCSM205	C# and ADO.Net	4	3	3
	Core V	PCSM206	Compiler Design	4	4	4
	Core VI	PCSM207	TCP/IP Networks	4	3	3
	Core VII	PCSM208	Research Methodology	4	3	3
	Core Practical III	PCSR203	C# and ADO.Net	5	3	3
	Core Practical IV	PCSR204	Research Methodology	4	2	2
	Non Major Elective II	PCSE202		5	4	5
	Service Learning	PCSX201/ PCAX201	Information Technology		1	1
Total				**30**	**23**	**24**
III Semester	Core VIII	PCSM305	Desing and analysis of algorithms	4	4	4
	Core IX	PCSM306	ASP.Net	4	4	4
	Core X	PCSM307	Distributed Operating System	4	4	4
	Core XI (Recent Trend in Computer Science)	PCSM308	Cloud Computing	4	4	4
	Core Practical V	PCSM303	ASP.Net Lab			
	Core Practical VI	PCSM302	Mini Project	4	4	4
	Core Project I	PCSP402	Project	2	-	-
	Non Major Elective	PALE401	Preparatory Course for NET/SET	5	4	4
Total				**30**	**27**	**27**
IV Semester	Core XII	PCSM402	Data Warehousing And Mining	6	5	5
	Core Project I	PCSP401	Project	14	6	6
	Value Education	PWSV401	Women's Studies	5	4	4
			Total	**30**	**17**	**17**
			Grand Total	**120**	**90**	**92**

COURSES OFFERED TO OTHER DEPARTMENTS

Course	Semester	Category	Course Code	Course Title	Contact Hrs/Week	Credit
M. A Tamil	IV	Major Elective	PTAM402	Computer Application	5	3
M.Sc Bio Informatics	I	Core III	PBIM103	Introduction to Computer Programming	6	4
	I	Core Practical I	PBIR101	Introduction to Computer Programming	6	4
	II	Core VI	PBIM203	Computer Programming in Perl and CGI	5	4
	II	Core Practical II	PBIR201	Computer Programming in Perl & CGI	4	2
	IV	Core XII	PBIM401	Database Management Systems	5	5
				Total	31	22

NON-MAJOR ELECTIVES - PG

Semester	Category	Course Code	Course Title	Contact Hrs/week	Credit
I	Non Major Elective I	PCSE101	Web designing tools	5	5
		PCSE102	Object Oriented Programming	5	4
II	Non Major Elective II	PCSE203	Advanced Internet with HTML	5	5
		PCSE204	Worksheet Analysis	5	4

PCSM104 ADVANCED JAVA PROGRAMMING

(Replaces the syllabus PCSM101 Internet and Java Programming found in the Academic council booklet -I)

Semester : I **Credits : 4**
Category : Core I **Hours/Week: 5**
Class & Major : I M.Sc Computer Science **Total Hours : 65**

Objectives

- To understand the working of Object oriented programming using Java
- To identify all features of the language and major parts of its associated libraries.
- To enable the students to design Webpage.

Unit I **13 Hrs**

Fundamentals of java: Introduction to java - Features of java- Access Controls - Static and fixed methods - Inner classes - String class - Inheritance - Overriding Methods - Using Super

class - Abstract classes - Packages - Interfaces - Exception Handling - Threads.

Unit II **13 Hrs**

Applet and AWT: Applets-Events-AWT components-Layouts-Graphics using Swings (JFC)-I/O Streams and File Streams- Introduction about Util package.

Unit III **13 Hrs**

Servlet and JSP programming: Servlet API-Servlet Life cycle-HTML to Servlet Communication-Introduction to JSP-JSP tags-Sessions.

Unit IV **13 Hrs**

JDBC and Java networking: Database Drivers-SQL package-Networking java-Sockets-Creating RMI server-Client-Interface-Networking using RMI-JDBC.

Unit V **13 Hrs**

Enterprise java Beans (EJB): Introduction to EJB-Deployment Descriptors-Session java Bean-Entity java bean-Message-Driven Beans.

Text Books

- Herbert Schildt, *The Complete Reference: Java 2*, Fourth Edition, Tata McGraw Hill, 2001.
- Margaret Levine Young, *The Complete Reference: Java*, Internet Millennium Edition, Tata McGraw Hill, 1999.

Reference Books

- Deitel, *Java How to Program*, Prentice Hall Edition, 1999.
- Keyur shah, *Gateway to Java Programmer Sun Certification*, Tata Mc Graw Hill 2002.

PCSM105 ADVANCED COMPUTER ARCHITECTURE AND PARALLEL PROCESSING

Semester : I **Credits : 5**
Category : Core II **Hours/Week: 5**
Class & Major : I M.Sc Computer Science **Total Hours: 65**
Objective:

- To gain substantial knowledge about the architecture of computer
- To understand the concepts behind CPU, Cache memory, Input Output and different kinds of processors.
- To understand Parallel Processing working Technique

Unit I **13 Hrs**

Overview: Introduction – Organization and architecture – Computer Evolution and Performance – System Buses – Computer components – functions – structures – Interconnection - PCI

Unit II **13 Hrs**

Memory: Internal Memory – Memory system overview – semi conductor main memory – Advance DRAM Organization – External Memory – Magnetic Disk – RAID – Optical Memory- Magnetic tape - I/O Modules – Programmed I/O – Interrupted Driven I/O – Direct Memory Access – I/O Channels and Processes – The External Interfaces

Unit III **13 Hrs**

The Central Processing Unit: Computer arithmetic – Arithmetic and logic unit – Integer Representations – Integer arithmetic - floating point representation – floating point arithmetic . Instruction Set : Machine instruction characteristics – types of operands – operations – Assembly languages. Addressing Modes and formats – Addressing and instruction formats.

Unit IV **13 Hrs**

CPU Structure And Functions: Processor organization – Register Organization – The instruction cycle – Instruction pipelining – Pentium processor – RISCs – Instruction execution characteristics – The use of large register file – compiler based register optimization – Reduced instruction set architecture – pipelining – Motorola 885110 – RISC vs CISC Controversy.

Unit V **13 Hrs**

Parallel Processing: Multiprocessing-Cache coherence and the MESI Protocol-Vector Computation-Parallel Processors.

Text Book:

William stallings, *Computer organization and Architecture*, Prentice-Hall, 2001

References

Vincent P. Heuring, Harry F. Jordan, *Computer Systems Design and Architecture*, Addison Wesley, 1999.

PCSR106/PCSM103 ADVANCED RELATIONAL DATABASE MANAGEMENT SYSTEM

Semester : I **Credit : 3**
Category : Core III **Hours/Week : 5**
Class & Major : I M.Sc Computer Science **Total Hours : 65**

Objectives
To enable the students

- Understand management and implementation issue pertinent to databases in public and private organizations.
- Understand the database development process and technology.
- Understand structured query language (SQL).

UNIT – I INTRODUCTION **15 Hrs**

An Overview of Data Base Management systems – Data Base System Architecture – Data Dictionary – an Introduction of Relational database – Relational Model – relations – Relational algebra – Relational Calculus – Integrity – Keys – SQL: set Operations – Aggregate Functions – Null Values – Nested Sub Queries – complex Queries – views – Modification of the Database – Embedded SQL – Dynamic SQL –Triggers – Security.

UNIT – II DATABASE DESIGN **15 Hrs**

Functional Dependencies – Normalization: 1 NF,2NF, 3NF, BCNF – Higher Normal forms – Semantic Modeling : The ER model- Database design with ER Model.

UNIT – III DATA STORAGE AND QUERYING **15 HRs**

Physical Storage Media – File Organization – Indexing : Ordered Indices – B Tree Indexing – B+ Tree Indexing – static Hashing – Dynamic Hashing – Query Processing – Query Optimization.

UNIT – IV TRANSACTION MANAGEMENT **15Hrs**

Transactions – Recovery – Two – Phase Commit – Concurrency Control – Three Concurrency Problems – Locking Protocols – Deadlock Handing – Serializability – Multi Granularity Locking – Dropping ACID.

UNIT –V FURTHER TOPICS 15Hrs

Distributed Databases – Case Studies: DB2 – Oracle – Microsoft SQL Server – Database Connectivity: ODBC – JDBC.

Text Books

- Date C.J., Kannan. A and swamynathan S,an Introduction to Data base Systems, Eighth Edition, New Delhi, Pearson Education Ltd., New Delhi, 2006
- Henry. F.Korth, Abraham Silberschatz, Sudarshan.S, Database System Concepts, Fifth Edition, MCGraw Hill, New Delhi,2006.

Reference Books

- Raghu Ramakrishnan, Johannes Gehrke, Database management Systems, Third Edition, Tata Mc Graw Hill, New Delhi, 2004.
- Elmasri.R, Navathe. S. B.., Fundamentals of Database Systems, Fifth Edition, Pearson Education/ Addison Wesley, New Delhi, 2006.
- Thomas Cannolly and Carolyn Begg, Database Systems, A Practical Approach to design, Implementation and Management, Third Edition, Pearson Education, New Delhi, 2007.

PCSR102 ADVANCED JAVA PROGRAMMING -LAB

(Replaces the syllabus PCSR101 Internet and Java Programming found in the Academic council booklet -I)

Semester : I **Credit : 3**
Category : Core Practical I **Hours/Week: 5**
Class & Major : I M.Sc Computer Science **Total Hours : 65**

Objectives

- To enable the students to develop Java Application program and Applet program**.**
- To enable the students to design Webpage.
- To understand the web oriented programming using servelet, JSP and EJB.

PROGRAMS

1. Program to illustrate the use of overloading and overriding.
2. Program to implement the concept of Interfaces and packages.
3. Generate the program using exceptions handling mechanism.
4. Program to achieve Inter thread communication and deadlock avoidance.
5. Implement the file operations.
6. Implementation of Applets.
7. Implementation of JDBC.
8. Implementation of JSP concepts.
9. Program to illustrate the use of Remote Method Invocation.
10. Servlet Programming
11. Implementation of EJB concept

PCSR103 ADVANCED RDBMS -LAB

Semester : II **Credit : 3**
Category : Core Practical II **Hours/Week : 5**
Class & Major : I M.Sc Computer Science **Total Hours : 65**

Objectives

- To understand management and implementation issues pertinent to databases in public and private sectors.
- To understand the database development process and technology.
- To understand structured query languages (SQL).

Implement the following in Oracle

1. Data Definition of base tables and views.
2. Data Manipulation of base tables and views.
3. Data Control of base tables and views.
4. PL/SQL Block.
5. PL/SQL using cursors.
6. Function and Stored Procedures.
7. SubPrograms and Packages.
8. Database Triggers.
9. Designing Oracle Forms using Menus and Buttons
10. Developing Oracle Reports

PCSM205 C# AND ADO.NET

Semester : II **Credit : 3**
Category : Core IV **Hours/Week : 4**
Class & Major : I M.Sc Computer Science **Total Hours :52**

Objectives

- To gain knowledge about .Net frame work.
- To design Web Applications.
- To gain knowledge about Server Side Scripting.

Unit-I **10 Hrs**

Overview of .NET Framework – Features of NET2.0 – Applications & state – Webform basic standard controls.

Unit-II **10 Hrs**

C# Class Fundatmentals – Building C# Applications and Libraries – The .Net Type system – Classes and Structs – Methods – Properties, Arrays and Indexers – Attributes – Interfaces

Unit-III **11 Hrs**

Expression and Operators – Program Flow Control – String Handling and Regular expressions – File I/O with Streams –

Unit-IV **10 Hrs**

Error handling with exceptions – Operator Overloading and User-Defined Conversions. - Delegates and Event Handlers – Documentation with XML

Unit-V: **11 Hrs**

ADO.NET: Overview – Making connections – executing Commands – Using Data Reader – Using Data Set and Data Adapter.

Text Books

- Tom Archer, Andrew WhiteChapel, *Inside C# ,* WP Publishers, 2005
- Greg Buczek, *ASP.NET Developers Guide*, Tata McGraw – Hill Publications, 2006.

Reference Books

David. S. Platt, *Introducing Microsoft. Net*, Third Edition, Microsoft Press, 2003.

PCSM206 COMPILER DESIGN

(Replaces the syllabus PCSM203 System Programming and Compiler Design found in the Academic council booklet - I)

Semester : II **Credit : 4**
Category : Core V **Hours/Week : 4**
Class & Major : I M.Sc Computer Science **Total Hours : 52**

Objectives

- To enable the students to learn the basic functions of compiler design.
- To study the principles and concepts of Analysis and type checking
- To enable the students to understood the syntax analysis and run time environments contents.

Unit-I **10 Hrs**

Introduction to compilers: Compilers – Analysis of source program – The Phases of compilers – Cousins of Compilers – The grouping of phases – A simple one-pass compiler Overview – Syntax Definition – Syntax-directed translation – Parsing – Lexical analysis.

Unit – II **12 Hrs**

Incorporating a symbol table – The role of lexical analyzer – Finite Automata – DFA – Conversion of an NFA into a DFA – Conversion of an NFA from a Regular Expression - From a regular expression to an NFA – Design of a Lexical Analyzer Generator – Optimization of DFA – based pattern matchers.

Unit-III **10Hrs**

Syntax Analysis: The role of a parser – Context Free Grammar – Top-down parsing – Bottom-up parsing – Operator – LR Parsers – Precedence parsing. Syntax-directed translation: Syntax – directed definitions – Construction of Syntax trees – Bottom-up evaluation of S-attributed definitions – Top-down translation – Recursive evaluators

Unit IV : **10 Hrs**

Type Checking – Type system – Specification of a simple Type Checker – Type conversions – An algorithm for unification. Run-time environments-Storage Organization-Storage -Allocation Strategies – Symbol Tables – Dynamic Storage allocation techniques.

Unit-V **10 Hrs**

Intermediate Code Generation: Intermediate languages – Declarations – Back patching – Procedure Calls. Code Generation: A simple code generator – the Dag representation of basic blocks – Peephole optimization – Code Generator generators. Code Optimization: Introduction – Principal sources of optimization – Optimization of basic blocks.

Text Books

- Alfred V.Aho, Ravi Sethi, Jeffery D.Ullman, *Compilers, Principles and Techniques and Tools*, Addison-Wesley, 1999.
- John J. Donovan, *System Programming*, Tata McGraw Hill Publishers, 1991.

Reference Books

- Chattopadhyay Santhanu, *Compiler Design*, PHI, 2006.
- Holub Allen, *Compilers in C*, PHI, 1997.

PCSM207 TCP/IP NETWORKS

Semester : II **Credit : 3**
Category : Core VI **Hours/week : 4**
Class & Major : I M.Sc Computer Science **Total Hours : 52**

Objective:

- To understand the basic concepts of networking
- To gain knowledge of various networking protocols.
- To understand the concepts of about Network Security

Unit I: **11 Hrs**

Introduction: Components of Computer (Motherboard, System Memory, Bios, Keyboard, Monitor, Serial Port, Parallel Port, Hard disk drive Modem, CDROM Drive).- Operating System-Types of OS (LINUX, UNIX, Windows 2003, Windows XP). Introduction to Networking-Types of Network (WAN, LAN, MAN)Peer to Peer & Client Server model-Network Topologies (BUS, STAR, Ring)- Network devices(Hub/Switch/Repeaters/Bridge/Router) - Network Cabling(Twisted Pair, Co-axial, Fiber Optic) - NIC Card.

Unit II: **11 Hrs**

Network Reference Model: ISO-OSI Model (application, presentation Session, Transport, Network Data link, Physical) -TCP/IP Model (Application, Transport, internet work, Network interface). - Basic Concept of IP Address/MAC Address/Subnet mask-PING/TRACERT.

Unit III: **10 Hrs**

Networking Protocols: Address Resolution Protocol (ARP) - Reverse Address Resolution Protocol (RARP) -Dynamic host configuration protocol (DHCP) - Internet control message protocol (ICMP)-Routing.

Unit IV: **10 Hrs**

Transport Layer-User datagram protocol (UDP)-Transmission Control Protocol – Congestion Control – Queuing Disciplines-Congestion Avoidance mechanism (DECbit Random Early Detection (RED) Source-Based Congestion Avoidance)

Unit V: **10 Hrs**

Domain Name System (DNS) –E-mail (SMTP)-World Wide Web (HTTP)-Simple Network management protocol (SNMP)-File Transfer Protocol (FTP)-Network Security: Firewall-Encryption and Decryption.

Text Books

- Larry L. Peterson, Bruce S.Davie, *Computer Networks: A System Approach*, Third Edition, Morgan Kauffman Publishers Inc., 2003.
- Andrew .S. Tanenbum, *Computer Networks*, Fourth Edition, 2003
- Jain S, *Data Communication and Networking*, BPB Publications, Second Edition, 2007.

Reference Books

- James F. Kuross, Keith W. Boss, *Computer Networking, A Top down Approach Featuring the internet*, Third Edition, Addison Wesley, may13 2004.
- Benhrom Frouzan, *Introduction to Data Communication* , Fourth edition 2005

PCSM208 RESEARCH METHODOLOGY

Semester : II **Credit : 3**
Category : Core VII **Hours/Week : 4**
Class & Major : I M.Sc Computer Science **Total Hours : 52**

Objectives

- To introduce the concepts of Research Methodology.
- To understand the use-case models, object analysis, testing strategies and quality assurance.
- To gain Practical Knowledge in MATLAB.

Unit-I **12 Hrs**

INTRODUCTION: Meaning of Research-Objectives of Research- Motivation of Research-Types of Research-Research approaches-Significance of Research-Research Methods versus Methodology-Research and Scientific Methods-Importance of Knowing How Research is Done-Research Process-Criteria of Good Research-Problems encountered by Researchers in India. Defining the Research Problem Methodology: What is a Research Problem? Selecting the problem-Necessary of defining the Problem- Techniques involved in defining a problem-an Illustration conclusion.

Unit-II **9 Hrs**

System Development – Object Basics – Development Cycle – Methodologies – Patterns – Frameworks –UML- Diagrams –Class Diagram – Use-Case Diagram UML Dynamic Modeling – Object Analysis - Object Relations – Attributes – Methods - Class and object responsibilities.

Unit-III **9 Hrs**

Quality Assurance tests – Testing Strategies - Object oriented on testing – Tests cases -Test Plans - Continuous testing - Debugging Principles - System Usability - Measuring user satisfaction - Case studies.

Unit-IV **9 Hrs**

MATLAB Introduction – Definition - Symbolic Calculation – Basics of MATLAB – Interactive Computation – Metric and Vectors – Matrix and Array Operation – Character Strings.

Unit-V **12 Hrs**

Command line function – Using Build –in Function –Saving and Loading Data – Programming in MATLAB: Scripts and Function – Script Files – Function files – Language specific features – Advanced data Object – Publishing Reports

Text Books

- Kothari. C.R, *Research methodology -Methods & Techniques*, Wiley Eastern Limited, 1991.

- Ali Bahrami, *Object Oriented Systems Development*, Tata McGraw Hill International Edition, 1999.
- Rudra pratap, *Getting started with MATLAB*,Oxford University Press, ,2010

Reference Books

Grady Booch, *Object Oriented Systems Development*, Second Edition, Pearson Education, 2007.

PCSR203 C# AND ADO.NET

Semester : II **Credit : 3**
Category : Core Practical III **Hours/Week : 5**
Class & Major : I M.Sc Computer Science **Total Hours :65**
Objectives

- It helps the student to acquire knowledge practical skills C# programming.
- To enable students to design and code ADO.NET.
- To develop their creativity in designing the project and to analyze the problem and to provide solution to the problem

1.Creating a C# project within Visual Studio

2.Basic Programs to demonstrate the working of basic data types.

3.Programs to implement the use of Objects.

4.Programs to implement multithreading

5.Programs to implements String handling

6.Programs to implement file handling

7.Using ADO.Net to handle data, connecting to a database, firing queries to display data

8. Using XML Libraries to export data from a database to an XML file

9.. Developing windows forms

10. Using various controls on Windows forms.

PCSR204 RESEARCH METHODOLOGY

Semester : II **Credit : 2**
Category : Core Practical IV **Hours/Week : 4**
Class & Major : I M.Sc Computer Science **Total Hours :52**
Objectives

- It helps the student to acquire knowledge in case tool.
- To enable students practical knowledge in MATLAB.

- To develop their creativity in designing the project and to analyze the problem and to provide solution to the problem

Prepare the following documents for two or three of the experiments listed below and develop the software engineering methodology.

1. Program Analysis and Project Planning.
   Thorough study of the problem – Identify project scope – Objectives – Infrastructure.
2. Software requirement Analysis
   Describe the individual Phases / Modules of the project – Identify Deliverables.
3. Data Modeling
   Use work products – Data dictionary – Use diagrams and activity Diagrams build and test lass diagrams – Sequence diagrams and add Interface to class diagrams.
4. Software Developments and Debugging
5. Software Testing
   Prepare test plan – perform validation testing – Coverage analysis – Memory leaks – develop test case hierarchy – Site check and Site Monitor.

Suggested List of Applications:

1. Student Marks Analyzing System
2. Quiz System
3. Online Ticket Reservation System
4. Payroll System

MATLAB Exercise

5.Simple Exercise in MATLAB
6.Solving Linear equation and Eigen values
7.Curve fitting
8.Data analysis and statistics
9.Addition of images

PCSX201/PCAX201 INTRODUCTUION TO INFORMATION TECHNOLOGY

Semester : II **Credit : 2**
Category : service Learning **Total Hours :52**
Class & Major : I M.Sc Computer Science

Objectives:

To enable the students

- Develop the service attitude
- Develop primary school teaching skills
- Inculcate interpersonal communicational skills

UNIT – I :INTRODUCTION TO COMPUTER **5 Hrs**

Introduction to Computer – CPU Parts – Hardware and Software – Input devices – Output devices Storage devices – Operating system – How to Operate the Computer – Types of Computer

Activities:

Animation session for computer parts – Handing Mouse.

UNIT – II MS WORD & EXCEL **10 Hrs**

MS WORD : MS Word Creation – Formatting the document – Tables.

MS EXCEL : Creation – Formulas – Commands – Working with worksheets – Creating a chart – data Sort – Functions

Activities:

To open & Create MS – Word document, To format & Align the document, To create the table, To insert Chart, Pictures, Header & Footer – Excel sheet creation and opening, Charts,
Clipart, pictures insertion, Using different formulas, Basic calculations are implemented using tool. Scientific calculator used for complex calculations.

UNIT – III: MS POWERPOINT & APPLICATION SOFTWARE **8 Hrs**

MS Paint – Toolbar and their icons – Navigation in Point – slide show – Custom animation.

Application software – Ms paint – Notepad, Calculator

Activities:

Slide Presentation – Painting and coloring, Using tols in MS Paint, To Open & create notepad, Font formatting &b Align the document.

UNIT – IV: MS PROJECT **5Hrs**

Tasks – links – constraints – resources – assignments – costs – formatting views.

Activities

To create project file

UNIT –V: INSERNET CONCEPTS **12 Hrs**

Network and its types – Search Engine – E mail concepts- Creating mail ID – Sending & Receiving mails – formatting mails – Attaching files – Blogs, Group Mails, Metasearch Engines – Java Applet.

Activities

To create e – Mail Id, dending and receiving message, to attach files.

Text Books

- Sanjay Saxena, A first course in computer, Vikas Publications, New delhi, 2000.
- Thomas A.Powell, Complete Reference HTML, 4th Edition, Tara Mc graw Hill, New Delhi, 2000.

Reference Books

- William Stalling, Data and Computer Communication, PHI, New Delhi, 2001.
- Ram.B, computer fundamentals, 3th Edition New Age Publications, New Delhi, 2002.
- www.stylusinc.net/ms project tutorial/project management. Shtml.

Targe Group : VI to VIII (Govt School Students)

Evaluation Components:

S.NO	COMPONENTS	MARKS
1	Participation & Involvement	20
2	Communication skills	20
3	Interpersonal Skills/usage of teaching Aids	20
4	Report Presentation	20
5	Reflection	20
Total		**100**

PCSM305 DESIGN AND ANALYSIS OF ALGORITHMS

Semester : III **Credit : 4**
Category : Core VIII **Hours/week : 4**
Class & Major : II M.Sc Computer Science **Total Hours : 52**

Objectives

- Apply the algorithms concepts.
- Provide a clear description of the design concept of algorithm.
- Apply the design and analysis principles in algorithm.

UNIT –I **10 Hrs**

Introduction – algorithm – Specification – Performance analysis – Divide and Conquer – General Method – Binary Search – Finding the Maximum and Minimum – Merge sort – Quick sort.

UNIT- II **11 Hrs**

The Greedy Method – General Method – Knapsack problem – tree Vertex Splitting Dynamic Programming – General Method – Multistage Graphs – All pairs shortest path – Single – Source Shortest paths – The Traveling Salesperson problem – Flow Shop Scheduling.

UNIT – III **10 Hrs**

Basic traversal and Search techniques – Binary Trees – Graphs – connected Components and Spanning trees – Biconnected Components.

UNIT – IV **10 Hrs**

Backtracking – General Method – 8 Queens Problem – Graph Coloring – Branch and Bound Method – 0/1 Knap sack Problem.

UNIT – V **11 Hrs**

NP Hard and NP Complete Problem – Basic Concepts – Cooke's Theorem – NP Hard Problem – Clique Decision Problem – Job Scheduling – Code Generation with Common Sub Expressions – Approximation Algorithms – Introduction – Absolute Approximations – E- Approximations.

Text Book

- Ellis Horowits, Sartaj Sahni & Snguthevar Rajasekaran, computer Algorithms, Galgotia Publications Pvt. Ltd., 2002.

Reference Books

- Sara Baase & Allen Van Gelde, Computer Algorithms, Introduction to design and Analysis, Third Edition, New Delhi, Pearson Education, 2002.
- Aho, Hoproft and Ullman, the Design and Analysis of Computer Algorithms, New Delhi, Pearson Education,2001.
- Basu S.K., Design Methods and Analysis of Algorithms, PHI, 2006.

PCSM305 ASP.NET

(Replaces the syllabus PCSM202 Distributed Technology found in the Academic council booklet -I)

Semester : III **Credit : 4**
Category : Core VIII **Hours/week : 4**
Class & Major : II M.Sc Computer Science **Total Hours : 52**

Objectives

- To gain knowledge .Net frame work.
- To design Web Applications.
- To understand working of ADO.NET.

UNIT-I **10 Hrs**

Overview of .NET Framework2.0 – Features of ASP.NET2.0 – Applications & state – Webform basic standard controls.

UNIT-II **10 Hrs**

Image controls – Image buttons – Image maps – List Boxes – Drop – down Lists – Bulleted Lists – hyperlinks – Link buttons – Checkboxes – Checkbox Lists – Radio Button – Radio button Lists – Tables – Panels.

UNIT-III **10 Hrs**

Validation controls :Required Field – Comparison – Range – Regular Expression – Custom – Calendars – Validation Groups – AdRotation. Login controls. Loginview – Login status – Login Name – PasswordRecovery – Create User Wizard – Changepassword.

UNIT-IV **12 Hrs**

Working with Database : ADO.NET object – Datasource controls – Data control parameters. Databound controls : Data Grid – Gridview – Detailview – Formview – Repeater – Access Data Source – sql data source **XML In .NET**: XML Basics- Attributes- Fundamentals of XML Classes: Document- Text Writer- Text Reader- XML Validations- XML In ADO.NET

UNIT-V **10 Hrs**

Master pages & Themes – web services – E-Mail – Error handling – user controls – Application Issues – security.

Text Books

- Greg Buczek, *ASP.NET Developers Guide*, Tata McGraw – Hill Publications, 2006.
- *ASP.NET2.0 Black Book*, DreamTech Press Kogent solutions, 2004.

Reference Books

- David. S. Platt, *Introducing Microsoft. Net*, Third Edition, Microsoft Press, 2003.

PCSM307 DISTRIBUTED OPERATING SYSTEM

Semester : III **Credit : 4**
Category : Core X **Hours/week : 4**
Class & Major : II M.Sc Computer Science **Total Hours : 52**

Objectives

- To Learn the function of Distributed Operating system.
- To Study the communication and synchronization in Distributed operating System.
- To Understand the processor and memory concepts in Distributed Operating System.

UNIT – I **10 Hrs**

Introduction - goals – Hardware Concepts – Software Concepts –Design Issues: Transparency – flexibility- Reliability – Performance – Scalability.

UNIT – II **10 Hrs**

Communication in Distribution Systems – The Client- server model – Addressing – Types of Primitives – Implementation – Group Communication – Introduction – Design Issues – Group Communication in ISIS.

UNIT – III **10 Hrs**

Synchronization in Distributed Systems – Clock Synchronization – Mutual Exclusion – Election Algorithms – Atomic Transactions – Deadlocks.

UNIT –IV **10 Hrs**

Processes and Processors in Distributed Systems – Threads – Processor Allocation – Scheduling – Fault Tolerance. Distributed File System – Design – Implementation – Trends in Distributed file systems.

UNIT – V **12 Hrs**

Distributed Shared memory – Introduction – shared memory – Consistency Models – Page-based Distributed Shared Memory.

Text Book

- Andrew. S. Tanenbaum, Distributed Operating Systems, New Delhi, PHI/Pearson Education Pvt Ltd., 2006.

Reference Book

- George Coulouries and others, Distributed systems: Concepts and Design, Fourth Edition, Pearson Education Pvt Ltd.

PCSM308 CLOUD COMPUTING

Semester : III **Credit : 4**
Category : Core XI **Hours/Week: 4**
Class & Major : II M.Sc Computer Science **Total Hours : 52**

Objectives

- To enable the student to be familiar with Cloud computing
- To gain substantial knowledge in application of cloud computing
- To identify the cloud services.

UNIT-I **10 Hrs**

Introduction – Cloud computing basics – overview – Applications – Intranets and the cloud – First Movers in the Cloud- Organization and cloud computing- Benefits – Limitations – Security Concerns – Regular Issues

UNIT-II **11 Hrs**

Business case for going to the cloud. – Cloud Computing Services – applications in Business – Deleting your datacenter – Hardware and Infrastructure – Clients –Security –Network –services – Standards.

UNIT-III **11 Hrs**

Accessing the Cloud-Platforms – Web Applications –web APIs – web Browers - Cloud Storage – overview – Cloud storage providers-standards Cloud computing at work – Software as a service - software plus Services – Developing application.

UNIT-IV **10 Hrs**

Cloud computing at work – Software as a service - Driving forces – Company offerings – Industries -software plus Services – overview - Developing application – Google – Microsoft – Development – troubleshooting .

UNIT-V **10 Hrs**

Local clouds and Thin Clients –Server Solution – Thin Clients –Migrating to the cloud –Cloud Services for Individuals-Enterprise class cloud offerings –Migration –Cloud Computing evaluation.

Text Book

- Anthony T.Velte, Toby J.Velte Robert elsenpeter,*Cloud Computing –A Practical approach*, . Tata McGraw Hill Publications, 2010.

Reference Books

- Barrie sosinsky, *Cloud Computing Bible*, Wiley publishing Inc., 2011.
- Borko Furht, Armando Escalante, *Handbook of Cloud Computing*, Springer, 2010.

PCSR303 ASP.NET - LAB

Semester : III **Credit : 4**
Category : Core Practical V **Hours/Week: 4**
Class & Major : II M.Sc Computer Science **Total Hours : 52**

Objectives

- To gain knowledge about internet.
- To design Simple Web Applications.
- Gain knowledge about server Side Scripting.

Create Web forms for the following applications **40 Hrs**

1. Online Digital Library
2. Online Banking
3. Web Shop
4. Online Airline Ticked Reservation System
5. Online Greeting card Application
6. Online Appointment Booking System
7. Online College Management System
8. Online Employee Payroll Management System

XML **12 Hrs**

1. Content displaying using XSL, CSS
2. Inter database access
3. XML manipulation using parser.

PCSM402 DATA WAREHOUSING AND MINING

Semester : IV **Credit : 5**
Category : Core XII **Hours/Week : 6**
Class & Major : II M.Sc Computer Science **Total Hours : 78**

Objectives

To enable the students

- Introduce the concept of data mining with in details coverage of basic tasks, metrics, issues and implication.
- Know about the topics like classification, clustering and association rules.
- Introduce the concept of data warehousing with special emphasis on Architecture and design.

UNIT – I **16 Hrs**

Data mining Introduction – Motivations – Importance – DM Functionalities – DM vs KDD – Data Ming Applications.

UNIT – II **16 Hrs**

Data warehousing – Multidimensional data Model – architecture – Implementation – Data Warehousing to Data Mining – Methods for Data Cube Computation – Development of Data Cube and OLAP Technology – DM Primitives.

UNIT – III **16 Hrs**

Data Preprocessing – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization and Concept Hierarchy Generation – association Rule Mining: MBA analysis – The apriori Algorithm – Improving the Efficiency of Apriori – Constraint – Based Association Mining.

UNIT – IV **15 Hrs**

Classification and Prediction –Issues – Decision Tree Induction – Bayesian – Rule – Based – Lazy Learners – Other Classification Methods – Prediction – Cluster Analysis – Types – Partition Methods – Outlier analysis.

UNIT – V **15 Hrs**

Multidimensional analysis and Descriptive Mining of Complex Data Objects – Spatial Data Mining – Multimedia – text World Wide Web.

Text Book

- Jiawei Han and Micheline Kamber, Data Mining concepts and Techniques, second Edition, Elsevier, Texct, Morgan Kaufmann Publishers.

Reference Book

- Aler Berson,, Stephen J. Smith, Data Warehousing data Mining OLAP, Tata McGrwaw Hill Publications, 2001.

PBIM103 INTRODUCTION TO COMPUTER PROGRAMMING

Semester : I **Credit : 4**
Category : Core III **Hours/Week : 6**
Class & Major : I M.Sc Bio Informatics **Total Hours : 78**

Objectives
To enable the students

- Make the students to know about the fundamentals of computers and programming .
- Implement the computational task and to code the same using the structured programming approach as provided by the c & C++ programming language. Finally students can implement in the various area of Bioinformatics.

UNIT – I **15 Hrs**

Introduction to computers – Classifiction of Digital Computer Systems – anatomy of a digital computer –number system – memory units – Auxiliary storage devices – Input Devices – Output Devices.

UNIT – II **15 Hrs**

Overview of C: Introduction – Basic Structure of C Programs – constants, variables and data types – Operators and expression – Managing input and output operators – Decision making and branching – Decision making and looping.

UNIT – III **11 Hrs**

Arrays – Character Array and String – functions: Definition – declaration category- Recursion – structures & Union: Introduction – Definition – Initialization – Copying and Comparing structures variables – Array of structure – arrays within structure – Unions.

UNIT – IV

Introduction to C++: OOPS Concept – Basic Input/ Output – functions – Classes and Objects.

UNIT – V

Constructors and Destructors – Operator Overloading – Inheritance – Polymorphism.

Text Books

- Alexis Leon and Mathews Leon, *Fundamentals of the Information Technology* , Vikas Publiction.
- Balagurusamy. E, *Programming in ANSI C*, second edition.
- Balagurusamy. E, *Object Oriented Programming with C++*, TMH Publishing.

Reference Books

- Kanetkar Y., Let us C, New Delhi, BPB Pub, 1999.
- Gottfried.B.S., Programming with C, second edition, New Delhi, TMH Pub .Co.Ltd, 1996.
- Robert Lafore., Object Oriented Programming with C++, Galgotia.

PBIR102 INTRODUCTION TO COMPUTER PROGRAMMING - LAB

Semester : I **Credit : 4**
Category : Core Practical I **Hours/Week : 6**
Class & Major : I M.Sc Bio Informatics **Total Hours : 72**

Objectives
To enable the students

- Use the basic concepts of the C Programming language to create computer application.
- Design, build, execute and debug C applications.
- Write simple application programs using C++.

Using C

1. Fibonacci Series
2. Factorial of a number
3. Printing Prime numbers
4. Check for palindrome
5. Linear Search
6. Bubble sort
7. Matrix Multiplication
8. Mark sheet using structure

Using C++

9. Maximum & Minimum of two numbers
10. Sum of two numbers
11. Area of triangle
12. Constructors & Destructors
13. Overloading Binary Operator
14. Multilevel Inheritance
15. Hierarchical Inheritance

PBIM203 COMPUTER PROGRAMMING IN PERL AND CGI

Semester : II **Credit : 4**
Category : Core VI **Hours/Week : 5**
Class & Major : I M.Sc Bio Informatics **Total Hours : 65**

Objectives
To enable the students

- Understand the concepts of object oriented Perl.
- Analyse the concept of CGI.
- Implement these concepts in Bioinformatics.

UNIT – I **10 Hrs**

Internet Connection Concepts: Internet – Computers on the internet – Servers, Clients,Ports – Internet Services – E – mail Concepts: E- mail addressing – Downloading E-mail – Web- Based E – mail – WWW Concepts: Elements of the Web- Web Browsers.

UNIT – II **10 Hrs**

File Handles and File Tests Object Oriented Perl: Introduction to Objects, Attributes,Classes, Methods, Polymorphism, Encapsulation, Inheritance, Constructors & Destructors, OO Programs, Introduction to Bio PERL. Graphics in PERL: File Formats, Outputting Image data, Dynamic Image in HTML, Introduction to GD module

UNIT – III **15 Hrs**

Connecting Perl with other Language: Embedding Perl & C – Perl Programming for Bioinformatics: Introduction to Biological algorithms, Exhaustive search algorithm – Restriction mapping, dynamic Programming algorithm – sequence Alignment Techniques, Statistical approach to gene prediction.

UNIT – IV **15 Hrs**

CGI: Introduction – creating a Static HTML file by a Perl Program – Creating a web Page "on the fly" by a CGI Program. Guidelines for HTML page generation by a CGI program. Receiving CGI – Program arguments from the URL – Using CGI pm for parsing the query string. Receiving CGI – program argument from a Web form.

UNIT – V **15 Hrs**

Introduction to CGI modules, writing CGI Script, Databases & Perl system interaction, LWP: Tools & LWP Modules, CGI forms, file upload, HTTP mirroring, retrieving & parsing a webpage.

Text Books

- Margaret Levine Young, Internet Millennium Edition, The Complete Reference, 2004.
- James.D.Tisdall, Beginning Perl for Bioinformatics, 1st Ed O'Relly associates, 2000.

Reference Books

- Larry wall, Tom Cheristiansen & Jon Orwant, Programming Perl 3rd Ed O'Reilly Associates, 2000.
- Randall, L.Schwartz & Tom Phonex, Learning Perl 3rd Ed O'Reilly Associates 2000.
- Scott Guelich, Shishir Gundavaram, Gunther Birzneits and Linda Mui CGI Programming, 2nd Ed, O' Reilly Associates, 2000.

PBIR201 COMPUTER PROGRAMMING IN PERL AND CGI - LAB

Semester : II **Credit : 2**
Category : Core Practical II **Hours/Week : 4**
Class & Major : I M.Sc Bio Informatics **Total Hours : 52**

Objectives
To enable the students

- Understand the concepts of objects oriented Perl.
- Understand the concept of CGI.
- Implement these concept in Bioinformatics.

1. Program to convert DNA to RNA.
2. Program to convert DNA to RNA using subroutine.
3. Program to calculate reverse complement of DNA sequence.
4. Program to read Protein sequence data from a file.
5. Program Extract annotation and sequence from Genbank file.
6. Program to Determining Frequency of Nucleotides.
7. Program to Reading and Translating a FASTA file.
8. Program to Searching for Motif.
9. Program to translation of DNA to Protein.
10. Program to Translation of DNA sequence in all six reading frames.
11. Using Perl and CGI prepare a mark sheet and calculate total, average and grade.
12. Prepare a Menu – driven interface using Perl.
13. Perform a sorting method for an Mark sheet.

PBIM401 DATABASE MANAGEMENT SYSTEMS

Semester : IV **Credit : 5**
Category : Core XII **Hours/Week : 5**
Class & Major : II M.Sc Bio Informatics **Total Hours : 65**

Objectives
To enable the students

- Acquire Knowledge on basic & practical skills on RDBMS
- Apply the data storage & indexing techniques.
- Understand query Optimization and Transaction management.

UNIT – I **10 Hrs**

Introduction – purpose of database system – data models – database language – Transaction management – Storage management- DBA – database users – system structure.

UNIT – II **10 Hrs**

E-R model – Hierarchical model – Network Model.

UNIT – III **15 Hrs**

Structural Relational database – Relational Algebra – Tuple Relational calculus – Domain Relational Calculus – Normalization.

UNIT – IV **15 Hrs**

Indexing and Hashing – Query Processing – Concurrency control – Security – Sequence analysis, Sequence data Banks, Structure Data Banks.

UNIT – V **15 Hrs**

Advanced Database concepts – Emerging Applications in Genomic databases.

Text Book

- Abraham Silberchatz, Henry F.Korth, s.Sudharshan, Database System Concepts 5th Edition, McGraw Hill, 2005.

Reference Books

- Elisa Nertino and Lorenzo Martino., Object-Oriented Database Systems Concepts And Architectures, Boston, USA, 1st Edition, Addison-Wesely Longman Publishing Co, 1993.
- Vikram Vaswani., The Complete reference Mysql, 1st Edition, Tata McGraw- Hill, New Delhi,2002.

PCSE101 WEB DESIGNING TOOLS

Semester : I **Credit : 5**
Category : Non Major Elective I **Hours/week : 3T + 2P**
Class & Major : I PG **Total Hours : 39T + 26P**

Objectives:

- To be able to develop multimedia applications.
- To gain knowledge in Flash
- To Obtain Practical Knowledge in Photoshop.

Unit-I **6 Hrs**

Photoshop: Introducing Photoshop – Image basics: Image files – Creating and opening images – resizing files & adjusting resolution – cropping & straightening images – colors – working with different color mode.

Unit-II **9 Hrs**

Creating selections: Quick selection, magic wand, shapes, lasso – adjusting selection – refining the edges – Layers: working with layers – the layer panel: Opacity & fill setting – blending modes – grouping layers - Copying selections – Creating layers – Transforming layers – Copying layers between images – Arranging layers – Layer mask.

Unit-III **6 Hrs**

Text: Working with text – add text to image – editing vector text layers – Artistic effects: Transformation – Filters – combining images – blending composition files.

Unit-IV **8 Hrs**

Introduction to flash: Tools – panels – timelines – strokes – visibility – rotating – skewing & scaling – colors – symbol types – creating buttons – editing symbols.

Unit-V **10 Hrs**

Applications: Tweening: motion – shape – tweening using timeline effects – Masking: creating & modifying the mask – creating scrolling text – animation primer – creating simple animation in a minute.

Practicals:

1. **Photo Effects** **2 Hrs**
   - 1.1 Decolouring
   - 1.2 Changing Cloth Texture And Pattern
   - 1.3 Changing Background
   - 1.4 Applying Soft Light Effect
2. **Photo Retouching** **3 Hrs**
   - 2.1 Color Coreection
   - 2.2 Blending Images
   - 2.3 Smooth Skin Effects
   - 2.4 Adding Blur Effects To Background
   - 2.5 Converting Black And White To Color Photo
3. **Text Effects** **3 Hrs**
   - 3.1 Create Mettalic Text
   - 3.2 Shinning Text
   - 3.3 Illuminus Text
   - 3.4 Transparent Glass Text
4. Digital Banner **2 Hrs**
5. **Image Editing** **3 Hrs**
   - 5.1 Creating Simple Images
   - 5.2 Editing, Resizing, Changecolor, Depth, Add & Edit Layer Style
   - 5.3 Stitch & Edit Two Images Into Single
6. Tweening 4 **Hrs**
7. Masking 3 **Hrs**
8. Buttons **2 Hrs**
9. Animation Banner **2Hrs**
10. Icon Animation **2 Hrs**

Text Books:

- Lisa Daniae Dayley & Brad Dayley, *Adobe photoshop SC5(Bible)*, wiley India Pvt, Ltd, 2010
- The complete Reference, *Macromedia flash MX, 2004*, Second Edition, McGraw Hill, 2004.

Reference Books:

- Nick vandome, *Photoshop elements 9, Jumpstrat*, McGraw Hill, Edition,2011.

PCSE102 OBJECT ORIENTED PROGRAMMING

Semester : I **Credit : 4**
Category : Non Major Elective I **Hours/Week:3T+2P**
Class & Major : I PG **Total Hours : 39**

Objectives

- To make the students to know about the fundamentals of computers and programming.
- To design, build, execute and debug c++ application
- To build sufficiently complex computation like predictions and extrapolations.

Unit-I **5 Hrs**

Overview of C: Introduction – Basic Structure of C programs – constants, variables and data types – Operators and expression – Managing input and output operators – Decision making and branching – Decision making and looping.

Unit-II **7 Hrs**

Arrays – Character Array and Strings – Functions: Definition – Declaration Category – Recursion – Structures & Union: Introduction – Definition – Initialization – Copying and Comparing structure variables – Arrays of structure – Arrays within structure – Unions.

Unit-III **11 Hrs**

Introduction to C++: OOPS Concept – Basic Input/Output – Functions – Classes and Objects.

Unit-IV **6 Hrs**

Constructors and Destructors-Constructors-Parameterized Constructors-Multiple Constructors in a Class-Dynamic Initialization of Objects-Copy Constructor-Dynamic Constructors-Destructors.

Unit-V **10 Hrs**

Inheritance-Introduction-Defining Derived Classes-Single Inheritance-Multilevel, Multiple, Hierarchical, Hybrid Inheritance – Polymorphism..

Practical: **26 Hrs**

1. Fibonacci Series
2. Factorial of a number
3. Printing Prime numbers
4. Check for palindrome
5. Linear Search
6. Bubble sort
7. Matrix Multiplication
8. Mark sheet using structure

Text Books

- Alexis Leon and Mathews Leon , *Fundamentals of the Information Technology*, Vikas Publication, 2009.
- Balagurusamy.E, *Programming in ANSI C*,second edition, TMH Publishing, 2004.
- Balagurusamy.E, *Object Oriented Programmingwith C++*, TMH Publishing 2008.

Reference Books

- Kanetkar Y., *Let us C*, New Delhi, BPB Pub,1999.
- Gottfried.B.S., *Programming with C*, second edition, New Delhi, TMH Pub. Co. Ltd,1996.
- Robert Lafore.,*Object Oriented Programming with C++*,Galgotia, 1996.

PCSE203 ADVANCED INTERNET CONCEPTS

(Replaces the syllabus PCSE301 found in the Academic Council Booklet – II)

Semester : III **Credit : 5**
Category : Non Major Elective **Hours/Week: 3T + 2P**
Class & Major : I PG **Total Hours : 39T+26P**

Objectives

To enable the students

- Use the basic concepts of Internet and Email concepts & HTML tags
- Create a new Email account and do all manipulation with net
- Search new concepts with Internet Search Engines

UNIT – I **7 Hrs**

Fundamentals of Electronic Mail: Introduction – Email: Advantages and Disadvantages – User ids, Passwords and Email addresses – Message Components – Massage Composition – Mailer features – E mail Inner Working – Email Management – MIME Types. Browsing and Publishing ; Introduction – Browser bare bones – Coast – to Coast surfing – Hyper Text Markup Language – Web page installation – Web page set up – HTML formatting and hyper link creation.

UNIT – II **8 Hrs**

The internet : Introduction – internet defined – internet history – the way the internet works – internet congestion – Internet culture – Business culture and the internet – Collaborative computing and the internet. World Wide Web : introduction the defined – web browser details – web writing styles – web presentation outline, design, and management – registering web pages.

UNIT – III **8 Hrs**

Searching the world wide web : introduction – directories, search engines and meta search engines – search fundamentals – search strategies – how does a search engine works. Telnet and FTP : introduction – telnet and remote login – file transfer – Computer Viruses.

UNIT – IV **8 Hrs**

Basic HTML: introduction – semantic versus syntactic – based style types – headers and footers – lists tables – debugging. Advanced HTML : introduction – frames – html forms – CGI script – dynamic documents – html tools – next generation html – cascading style sheets.

UNIT – V **8 Hrs**

News groups, Mailing Lists, Chat rooms and MUDs : introduction – news groups and mailing lists history – mailing list fundamentals – newsgroups and mailing lists availability –chat-rooms –MUDs. Electronic Publishing : introduction – electronic publishing advantages and disadvantages – copy right issues – project Gutenberg and on-line nooks – electronic journals, magazines and news papers – miscellaneous publishing issues.

Lab Exercises

1. Create a simple HTML web page with Heading and Paragraph
2. HTML web page with linking option, ordered and unordered list option
3. HTML web page with all table options
4. HTML web page with all form options
5. Create CSS sheet to form a unique format for all the above programs
6. Create a simple javascript program with control structure
7. Create simple javascript program with loops
8. Create HTML web page with filters and transitions
9. DHTML page to create display an image and change the size of an image while on mouse move
10. XML page to create a simple file.
11. To create a simple webpage application using all the above program

Text Books

- Raymond Greenlaw, Ellen Hepp, fundamentals of the INTERNET and the World Wide Web, Second Edition, Tata McGRAW – Hill Edition, New Delhi, 2005.

Reference Book

- Margaret Levine Young, The Complete Reference: Java, Internet Milllennium Edition, Tata McGraw Hill, New Delhi, 2004.

PCSE204 WORKSHEET ANALYSIS

Semester : II **Credit : 4**
Category : Non Major Elective II **Hours/Week : 3 T +2P**
Class & Major : I PG **Total Hours : 39+26**

Objectives

- To use the basic concepts of Worksheet in Excel and its functions
- To create a new worksheet and do all manipulation with charts
- To work with database and link with other applications

Unit-I **7 Hrs**

Introducing Excel – Controlling the Excel window – Starting new Work book – Spreadsheet Solutions and Templates – Working with workbooks – Customizing Excel settings

Unit-II **8 Hrs**

Putting data into Excel – Entering text and numbers into cells – entering Formulas and Functions – Moving and changing formulas.

Unit-III **8 Hrs**

Formatting and printing with Excel – Formatting numbers – Formatting Text and cells – Worksheet formatting – Printing with excel.

Unit-IV **8 Hrs**

Charts and Graphics – Creating Charts – Improving excel sheet with charts – Incorporating Graphics with worksheet.

Unit-V **8 Hrs**

Using Excel as a database – Working with Database Data in Excel – Moving the most of Excel tools – Linking excel with other applications – Using excel with the Internet – Sharing a workbook with Multiple Users.

Practicals **26 Hrs**

1. Creation of Worksheet & Aligning, editing Data in cell,
2. Create a worksheet with neat formatting Borders around cell, Inserting, deleting Rows & Columns, Change of column width & row Width.
3. Manipulate worksheet using Mathematical Functions

4. Manipulate worksheet using Date Functions
5. Manipulate worksheet using Time Functions
6. Manipulate worksheet using Statistical Functions
7. Creation of Charts & controlling the Appearance of Chart
8. Create a worksheet and arrange data using DATA menu items
9. Manipulate excel data with external database
10. Link excel with other applications and share it to Internet.

Text Book:

- Faithe Wempen, Donna Payne, *The Essential Excel 2010*, BPB Publications, 2010.

Reference Book

- Sanjay saxena, A first course in Computers, second Edition, vikas Publishning House Pvt. Ltf., New Delhi, 2008.

COURSE PROFILE M.Phil (COMPUTER SCIENCE)

Semester	Part	Category	Course Code	Course Title	Contact Hrs/week	Credit
I		Core paper I	MCSM103	Research Methodology	6	5
		Core Paper II	MCSM104	Advanced Topics in Computer Science	6	5
II		Core paper III	MCSM201	Special Area Study		5
		Core paper IV	MCSD201	Dissertation & Vivavoce		15

MCSM103 RESEARCH METHODOLOGY

(Replaces the syllabus MCSM101 Research Methodology found in the Academic council booklet -I)

Semester	**: I**	**Credit**	**: 5**
Category	**: Core I**	**Hours/Week**	**: 6**
Class & Major	**: M.Phil Computer Science**	**Total Hours**	**: 78**

Objectives

- To impact basic concepts required for research and to give knowledge on research types and thesis writing.
- To give knowledge on research types and thesis writing.
- To impact the knowledge on advance topics in Computer Science such as logics, relation and functions.

Unit-I **16 Hrs**

Thesis Writing: Research types- objectives and approaches – Literature Collection: Web browsing - Software Tools - Writing review and journal articles - manuscript publication - Planning a thesis - general format – page and chapter format – footnotes – tables and figures – references and appendices.

Unit-II **16 Hrs**

Basic of Operations Research: Development of Operations Research – Definition of Operations Research – Applications of Various OR Techniques – Models in OR – Classification Schemes of Models – Characteristics of a Good Model – Advantages of a Model – Limitations of a Model – Constructing the Model – Approximations in OP Models – Types of Mathematical Models – Queuing Models – Introduction – Elements of a Queuing System –Operating Characteristics of a Queue system – Waiting Time and Idle Time cost – Transient and Steady States of the System – Kendall's Notation for representing Queuing Models – Model I Single channel Poisson Arrivals with exponential Service Times, Infinite - population(M/M/1):(FCFS/∞/∞) – Explanatory note on the queuing formulae - Model II Generalization of Model(M/M/1):(FCFS/∞/∞) – Model VI Multi-Channel Queuing Theory Model (M/M/C)(FCFS/∞/∞).

Unit-III **16 Hrs**

ALGORITHM ANALYSIS: Algorithm Analysis: Mathematical Background- Model-What to Analyze-Running Time Calculations-Lists, Stacks, and Queues: Abstract Data Types (ADTs) - The List ADT - vector and list in the STL -Implementation of vector - Implementation of list- The Stack ADT- The Queue ADT- Trees: Preliminaries- Binary Trees-The Search Tree ADT—Binary Search Trees-AVL Trees-Splay Trees-Tree Traversals-B-Trees.

Unit-IV **15Hrs**

LOGICS: Propositions- Precedence Rules for operators – Laws of Equivalence – Natural deduction System:-Developing Natural Deduction System Proofs.

Unit-V **15 Hrs**

RELATIONS AND FUNCTIONS: Relation Properties – Matrix and Graph – Graph Notations for relations - Partition and covering – Equivalence Relation – Compatibility Relations- Partial Ordering – Functions – Components- Composition of Functions –Inverse Functions – Binary and n-ary Operations.

Text Books:

- Kothari. C.R, *Research methodology -Methods & Techniques*, Wiley Eastern Limited, 1991.
- Berny, H.Durston, M.Poole, "Thesis and Assignment writing", Wiley Eastern Ltd, ND, 1970.
- Mark Allen Weiss, *Data Structures and Algorithm Analysis in C++*, 2nd edition, Pearson Education.
- Salaria. R.S, *Computer oriented numerical methods*, Khanna book publishing co. (p) Ltd., 1999.
- Leon S.Levy, *Discrete Structures of Computer Science*, Wiley Eastern Ltd., 1980.
- Anderson.J and Bern Durtson. H, Poole, *Thesis and Assignment Writing*, Wiley Eastern Ltd., 1970.
- Er.Prem Kumar gupta, Dr. D.S. Hira *Problems in Operations Research* , S.Chand & Company Ltd., New Delhi, 2009.

Reference Books

- Computer Algorithms/C++, E.Horowitz, S.Sahani and S.Rajasekharan, Galgotia Publishers pvt. Limited.
- Introduction to Algorithms, 2nd Edition, T.H.Cormen, C.E.Leiserson, R.L.Rivest, and C.Stein, PHI Pvt.Ltd./ Pearson Education.

MCSM104 ADVANCED TOPICS IN COMPUTER SCIENCE

(Replaces the syllabus MCSM102 Advanced Topics in Computer Science found in the Academic council booklet -I)

Semester: I **Credit : 5**
Category: Core II **Hours/Week : 6**
Class & Major : M.Phil Computer Science **Total Hours : 78**

Objectives

- To enable the researchers to understand the concepts of Network Security and Cryptology.
- To study the Grid Computing and Distributed Database.
- To impact the deep knowledge on advance topics in Computer Science.

Unit-I **16 Hrs**

NETWORK SECURITY AND DIGITAL SIGNATURE: Cryptography-Introduction-Submission Ciphers-Transposition Ciphers-One time pads-Cryptographic Principles-Symmetric Key Algorithms: DES-AES-Cipher modes-Cryptanalysis-Public key Algorithms- Symmetric key Algorithms-Public key Signatures-Message Digests-The Birth Day Attack-Management of Public keys: Certificates-X509-Publickey infrastructure.

Unit-II **16 Hrs**

CLOUD COMPUTING: Introduction – Cloud computing basics – overview – Applications – Intranets and the cloud – First Movers in the Cloud- Organization and cloud computing- Benefits – Limitations – Security Concerns – Regular Issues - Business case for going to the cloud. – Cloud Computing Services – applications in Business – Deleting your datacenter – Hardware and Infrastructure.

Unit-III **16 Hrs**

DISRTIBUTED DATABASE & MANAGEMENT SYSTEM: Architecture – Distributed Database Design – Query Processing – Query Decomposition & Data Localization – Optimization of Distributed Queries – Transaction Management Concepts.

Unit-IV **15 Hrs**

SOFT COMPUTING: Introduction to soft Computing and Neural networks: Evolution of Computing -Soft Computing constituents-Conventional AI to Computational Intelligence .Adaptive networks: Architecture-Back propagation feed forward networks – Extended Back propagation feed forward networks. Supervised learning : Perceptions – Adaline - Back propagation Multilayer perceptions-Radial basis function networks - Learning from Reinforcement: Failure is the surest path to success-The temporal Difference learning-Q-learning. Unsupervised learning Neural networks: Kohenen self –organizing networks-Hebbian learning-the Hopfield network.

Unit-V **15 Hrs**

DIGITAL IMAGE PROCESSING: Introduction - Digital image representation – Fundamental steps and components in Digital Image Processing. Digital Image Fundamentals: Elements of visual perception, sensing and acquisition. Sampling and Quantization – Basic relationship between pixels - Intensity Transformations and Spatial Filtering: Intensity Transformations – Basic Intensity Transformation Functions – Histogram Processing – Fundamentals of Spatial Filtering. Filtering in the Frequency Domain.

Text Books

- William Stalling, "*Cryptography and Network Security"*, New Delhi, Pearson Education, 2006.
- Anthony T.Velte, Toby J.Velte Robert elsenpeter,*Cloud Computing –A Practical approach*, . Tata McGraw Hill Publications, 2010.
- Jyh –Shing Roger Jang,Cheun-Tsai Sun,Eiji Mizutani, *Neuro fuzzy and Soft Computing*, Prentice –Hall of India,2003
- Rafael C.Gonzalez & Richard E. Woods, *Digital Image Processing*, Third Edition, PHI Learning Private Limited, 2008
- Tamer Ozsu. M. & Patrick Valduriez, *Principles of Distributed Systems*, Third Edition, Prentice Hall Press, 2007.

Reference Books:

- Barrie sosinsky, *Cloud Computing Bible*, Wiley publishing Inc., 2011.
- Anil K. Jain, *Fundamentals of Digital Image Processing*, Second Edition, New Delhi, Prentice-Hall of India Private Limited, 1995.

DEPARTMENT OF COMPUTER APPLICATIONS & ISM

PREAMBLE

UG: Course Profile, list of courses offered to other departments & the syllabi of revised Courses offered in the first three semesters and

PG: Course Profile, list of courses offered to other departments & the syllabi of revised Courses

Are presented in this booklet.

COURSE PROFILE: BCA

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit	
						Min	Max
I	Part- I	Language	UTAL101/ UTAL102/ UFRL101/ UHIL101	Basic Tamil – I/ Advanced Tamil – I/ French Hindi	4	2	3
	Part-II	English	UENL101/ UENL102	Basic English-I/ Advanced English-I/	4	2	3
	Part-III	Core I	UCAM103	Foundation of Computers	5	4	4
	Part-III	Core II	UCAM104	Office Automation and HTML	4	3	3
	Part-III	Core Practical I	UCAR102/ UISR102	Office automation and HTML-Practicals	3	2	2
	Part-III	Allied I	UMAA106	Mathematical Methods-I	6	5	5
	Part-IV	Value Education			2	1	1
	Part-IV	Soft skills			2	1	1
				Total	**30**	**20**	**22**
II	Part-I	Language	UTAL201/ UTAL202/ UFRL201/ UHIL201	Basic Tamil – II/ Advanced Tamil – II/ French Hindi	4	2	3
	Part-II	English	UENL201/ UENL202	Basic English-II/ Advanced English-II/	4	2	3
	Part-III	Core III	UCAM202	Programming in C	5	4	4
	Part-III	Core Practical II	UCAR202/ UISR202	Programming in C-Practicals	3	3	3
	Part-III	Internship	UCAI201	Summer Internship	-	-	1
	Part-III	Allied II	UMAA206	Mathematical Methods-II	6	5	5
	Part-IV	Non Major Elective			4	2	2
	Part-IV	Value Education			2	1	1
	Part-IV	Soft skills			2	1	1
	Part-V	Extension Programme / Physical Education			-	1	2
				Total	**30**	**21**	**25**
III	Part-III	Core IV	UCAM304	Programming in C++	4	4	4
	Part-III	Core V	UCAM305	E-Commerce and its Applications	5	4	4
	Part-III	Core VI	UCAM306	Fundamentals of Data Structures	5	4	4
	Part-III	Core Practical III	UCAR302	Programming in C++-Practicals	3	3	3
	Part-III	Allied III	UCOA301	Financial Accounting I	5	4	4
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Value Education			2	1	1
	Part-IV	Soft skills			2	1	1
				Total	**30**	**23**	**23**

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit	
						Min	Max
IV	Part-III	Core VII	UCAM401	Programming in Java	5	4	4
	Part-III	Core VIII	UCAM403	Object Oriented Analysis and Design	4	4	4
	Part-III	Allied IV	UMAA404	Resource Management Techniques	5	4	4
	Part-III	Core Practical IV	UCAR401	Programming in Java-Practicals	3	3	3
	Part-III	Allied V	UCOA401	Financial Accounting II	5	5	5
	Part-III	Summer Internship	UCAI401	Summer Internship	-	-	1
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Soft skills			2	1	1
	Part-IV	Value Education			2	1	1
	Part-V	Extension Programme / Physical Education			-	-	2
Total					**30**	**24**	**27**
V	Part-III	Core IX	UCAM501	Visual Programming	5	5	5
	Part-III	Core X	UCAM503	Database Management System	4	4	4
	Part-III	Core XI	UCAM504	Software Engineering	4	4	4
	Part-III	Core Practical V	UCAR501	Visual Programming & RDBMS	3	3	3
	Part-III	Core Practical VI	UCAR503	Case Tools Lab -Practicals	3	3	3
	Part-III	Allied Optional			5	4	4
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Soft skills			2	1	1
Total					**30**	**26**	**26**
VI	Part-III	Core XII	UCAM601	Distributed Technology	5	5	5
	Part-III	Core XIII	UCAM602	Data Communication Networks	5	5	5
	Part-III	Core XIV	UCAM604	Comprehensive Viva-Voce	-	1	1
	Part-III	Core XV	UCAM605	Operating Systems	5	4	4
	Part-III	Core Practical VII	UCAR601	Distributed Technology-Practicals	5	3	3
	Part-III	Core Project	UCAP601	Project Work	3	3	3
	Part-III	Major-Optional	UCAO601/ UCAO603/ UCAO604	Mobile Computing/ Computer Graphics/ Cloud Computing	5	4	4
	Part-IV	Soft skills	USKS601	Career Skills	2	1	1
	Part V	Extension Programme/Physical Education			-	-	2
Total					**30**	**26**	**28**
Grand Total					**180**	**140**	**151**

NON-MAJOR ELECTIVES-UG

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit
II	IV	Non – Major Elective I	UCAE203	Web Designing	4	2
III	IV	Non – Major Elective II	UCAE302	Internet and World Wide Web	4	2
IV	IV	Non – Major Elective III	UCAE402	Multimedia	4	2
V	IV	Non – Major Elective IV	UCAE502	Visual Basic	4	2

ALLIED OPTIONAL-UG

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit
V	III	Allied Optional	UCAA503	Animation Techniques	5	4

UCAM103 FOUNDATION OF COMPUTERS

(This course replaces UCAM101 Programming in C found in the Academic Council Booklet-I)

Semester: I **Credits : 4**
Category: Core I **Hours/week : 5**
Class & Major:I BCA **Total Hours : 52**

Objectives

- To understand the concept of office automation.
- To introduce the basics of computer hardware and software, concept of programming.
- To inculcate Knowledge on Networks concepts.

Unit –I **10Hrs**

Evaluation of Computers: Introduction to Computers-Characteristics-History-Types of Computers: Based on purpose-Based on technology used-Based on size and storage capacity-Computers of the future. Applications of computers: Role of computers in business, science, education, entertainment, data communications, information systems and emerging information technologies-Disadvantages and Limitations.

Unit-II **12Hrs**

Basic computers organizations: Hardware and Software-CPU-Memory unit-Storage unit-Mother board-Cords, Ports and cards-Power supply-Parallel Machines-Future of Processor-Speed of Computer. Input and Output devices, Storage devices.

Unit-III **10Hrs**

Binary Systems: Digital Computers and Digital Systems – Binary Numbers – Number Base Conversion – Octal and Hexadecimal Numbers – Compliments. Overview of Internet.

Unit-IV **10Hrs**

Software Concepts and Terminology: Types of Software – System software and Applications software - Computer languages: Machine – Assembly – High Level – 4GL – Fundamentals of Programming languages. Operating System Concepts: Definition Evolution of Operating System -Types of Operating Systems: Batch – Multiprogramming - Network - Distributed Operating System.

Unit-V **10 Hrs**

Data communication: Fundamentals - Data Communication codes - Speed of communication – Channels -Types of Transmission: Analog – Digital -Parallel and Serial Transmission- Data Communication Modes: Synchronous and Asynchronous - Modes of communications: Simplex-Half-Duplex-Full Duplex – Elements of Communication.

Text Books

- Ashok Arora, *Foundations of Computer Science*, First Edition, New Delhi, 2006.
- Alexis Leon, Mathews Leon, *Fundamentals of Information Technology*,Vikas Publications,2001.

Reference Books

- M.Morris Mano," *Digital Logic and Computer Design*" –PHI, 1996.
- Ram.B, *Computer fundamentals*, New Age Publications, New Delhi, 2007.
- William Stalling, *Data and Computer Communication*, Eighth Edition, PHI New Delhi, 2007.
- Behrouz Forouzan and Firouz Mosharraf, *Foundations of Computer Science*, Second Edition, Thomson Technology, 2008.

UCAM104 OFFICE AUTOMATION AND HTML

(This course replaces UCAM102 Fundamentals of Computer found in the Academic Council Booklet-I)

Semester: I **Credits : 3**
Category: Core II **Hours/week : 4**
Class & Major:I BCA **Total Hours : 52**

Objectives

- To understand the concept of office automation.
- To introduce the basics of computer hardware and software, concept of programming.
- To apply the various HTML Tags to create webpages.

Unit –I **10Hrs**

Ms Office: Introduction -Word Basics - Formatting toolbar - Picture - Tables – Templates - Mail merge-Macros. Ms-PowerPoint: Introduction - Toolbar – command and their icons – Navigation in PowerPoint -Slide show - Custom Animation.

Unit-I **12Hrs**

Ms-Excel: Introduction – Menus – Formula Transaction – Commands - Toolbars and their icons- Formatting text - working with worksheet - creating a Chart - Data Sort – Functions.

Unit-III **10Hrs**

Ms-Access: Introduction – Database-Menus -Table creation -Wizard -Reports- Internet- Search engine- E-mail-Security.

Unit-IV **10Hrs**

Introduction to HTML: Document types – Rules of HTML – Core HTML: Headings – Paragraphs and Breaks – Divisions and centering – List.

Unit-V **10 Hrs**

Linking in HTML – HTML fonts and colors – Frames: Frame layouts – Floating Frames-Tables.

Text Books

- Sanjay Saxena, *A First course in computers*, Third Edition, New Delhi, 2003.
- Thomas A.Powell, *Complete Reference HTML*, Fourth Edition, McGraw Hill Publishers, Osborne, 2003.

Reference Books

- Ram.B, *Computer fundamentals*, New Age Publications, New Delhi, 2007.
- William Stallings, *Data and Computer Communication* Eighth Edition, PHI New Delhi, 2007.

UCAR102 / UISR102 OFFICE AUTOMATION & HTML-PRACTICAL

Semester : I **Credit : 2**
Category : Core Practical I **Hours/Week : 3**
Class & Major : I BCA **Total Hours : 39**

Objectives:
To enable the students

- Develop a students with the knowledge of document preparation, Excel calculation and power point presentation.
- Learn the basic HTML tags for creating web pages.

MS WORD **9 Hrs**

1. Text Manipulation and Formatting
2. Usage of Spell check and Find and Replace, Numbering & Bulleting
3. Picture Insertion & Alignment, Header & footer
4. Creation of Templates & document using Templates
5. Mail Merge Concepts
6. Creation of Tables & formatting tables

MS EXCEL **10 Hrs**

1. Creation of Worksheet & Aligning, editing Data in cell
2. Excel Function (Mathematical, Date, Time etc.,)
3. Change of column width & row Width, Inserting, deleting Rows & Columns
4. Drawing Borders Around Cells
5. Creation of Charts & controlling the Appearance of Chart

MS POWERPOINT **10 Hrs**

1. Creating, saving, closing Presentation
2. Changing slide Layout
3. Inserting & working with Clip-Arts
4. Applying Transition & animation Effects with Slide show

HTML **10 Hrs**

1. Creating a HTML page using (<html>,<head>,<body> tags)
2. Working with Formatting tags (<b>,<i>,<u>,
,<p> and color size and marquee tags)
3. Creating ordered list and unordered list
4. Inserting Images and Alignment using HTML tags
5. Creating Tables and formatting Tables
6. Creation of forms (text box, combo box etc….) and frame sets

UCAM101 / UCAM202 PROGRAMMING IN C

Semester : II **Credit : 4**
Category : Core III **Hours/week : 5**
Class & Major : I BCA **Total Hours : 52**

Objectives:
To enable the students

- Use the basic concepts of the C programming language to create computer applications.

- Design, build, execute and debug C applications.
- Use variables, arrays, strings, flow control statement, point and disk files in C applications.

UNIT – I **10 Hrs**

C fundamentals: character set - Identifiers and keywords – data types – constants – variables – declaration – expression – statements. Operators and Expression: arithmetic operators – unary operators – relational and logical operators – assignment operators – conditional operators and library function.

UNIT – II **10 Hrs**

Data input and output statements: getchar and putchar functions – scanf and printf function – more about scanf and printf functions. Control statements: if-else, while, do-while, for-nested control structure – switch – break – continue – comma operator – goto statement.

UNIT – III **10 Hrs**

Functions: definition – accessing and function prototype – passing argument to a function – recursion. Program structure: storage classes – automatic variables – external variables – static variable. Arrays: definition of array – processing array – passing array to function – multidimensional arrays – arrays and strings.

UNIT – IV **12 Hrs**

Pointers: Fundamentals – pointer declaration – passing pointer to a function – array of pointers – Structure and Unions: Definition of structure – processing structure – user defined data types – structure and pointers – passing structure to function – self referential structure – Unions – Bit wise operations.

UNIT – V **10 Hrs**

Data files: opening and Closing a data file – creating data file – processing a data file - unformatted data file.

Text Book

- Balagurusamy E, Programming in ANSIC, Third Edition, MC Graw Hill, 2006.

Reference Books

- Gottfried, B. S Programming with C, Second Edition, New Delhi TMH Pub. Co. Ltd., 1996.
- Schilt H, C: The Complete Reference, 4th Edition, TMH Edition, 2000.
- Kanetkar Y, Let us C, Fifth Edition, New Delhi, BPB Pub., 1999.

UCAR202 / UISR202 PROGRAMMING IN C-PRACTICAL

Semester : II **Credit : 3**
Category : Core Practical II **Hours/Week : 3**
Class & Major : I BCA **Total Hours : 39**

Objectives:
To enable the students

- Use the basic concepts of the C programming language to create computer applications.
- Design, build, execute and debug C applications.

- Use variables, arrays, strings, flow control statement, point and disk files in C applications.

I. Summation of Series: **9 Hrs**

1. Sin(x), 2. Cos(x), 3. Exp(x) (Comparison with built in functions)

II String Manipulation **9 Hrs**

1. counting the no. of vowels, consonants, words, white spaces in a line of tect and array of lines.
2. Reverse a string & check for palindrome.
3. Sub string detection, count and removal.

III Recursion **7 Hrs**

1. ${}^{n}P_{r}$, ${}^{n}C_{r}$
2. Gcd of two numbers
3. Fibonacci series
4. Minimum and Maximum of numbers
5. Towers of Hanoi

IV Matrix Manipulation **8 Hrs**

6. Addition & Subtraction
7. Multiplication
8. Transpose, and trace of a matrix
9. Determinant of Matrix

V Sorting and Searching: **8 Hrs**

- Insertion Sort
- Bubble Sort
- Linear Search
- Binary search

UCAM301/UCAM304 PROGRAMMING IN C++

Semester	**: III**	**Credit**	**: 4**
Category	**: Core IV**	**Hours/week**	**: 4**
Class & Major	**: II BCA**	**Total Hours**	**: 65**

Objectives:

To enable the students

- Understand the concepts of object oriented programming
- Enable the students to write simple application programs using C++
- Develop, compile and run simple to moderately complex C++ programs

UNIT – I **10 Hrs**

Overview of C++: Basic concept of Object Oriented Programming – C++ Fundamentals – C++ Keyword – genera from of a C++ Program – Classes and Objects

UNIT – II **12 Hrs**

Arrays: Arrays of Objects – Pointers: Pointers to Objects to Objects – Type checking C++ Pointers- This Pointer – Pointers to Derived Type and Class Members – References – dynamic Allocation Operators: Initializing – Allocating Arrays and Objects – Function Overloading – copy Constructors and Default Arguments

UNIT – III **13 Hrs**

Operator Overloading – Inheritance – Virtual Function and Polymorphism

UNIT – IV **15 Hrs**

Templates: generic Function – Applying Generic function – Generic Classes – Power of Templates – Exception Handing : Fundamentals – Derived class Exception – Exception handing option – terminate(), unexpected(),uncaught-exception() Functions.

UNIT – V **15 Hrs**

C++ I/O system Basics: C++ Steam Classes – Formatted I/O – Overloading<< and>> Operators –C ++ File I/O: Opening and Closing a file – reading and Writing text file Unformatted and Binary I/O.

Text Book

- Herbert Schildt, The complete Reference C++, Sixth Edition, Tata McGraw-Hill Publising,1999.

Reference Book

- Balagurusamy E, Object Oriented Programming with C++, fifth Edition, TMH Publishing , 2009.
- Robert Lafore, Object Oriented Programming with C++, Fourth Edition, Golgotha, 2007.

UCAM305 E-COMMERCE AND ITS APPLICATIONS

(This course replaces UCAM303 E-Commerce and its Appications found in the Academic Council Booklet-II)

Semester: III **Credits : 4**
Category: Core V **Hours/Week : 5 Class &**
Major:II BCA **Total Hours : 65**

Objectives

- To enable the students to learn the applications of E-Business.
- To know about Electronic payment systems.
- To inculcate knowledge on E-Commerce concepts in the present IT world.

Unit-I **11 Hrs**

Introduction to Electronic Commerce: Electronic Commerce Framework, Electronic commerce and media convergence - the anatomy of E-commerce applications - Electronic commerce consumer applications - E-commerce organization applications- Network infrastructure of E-Commerce – Components of the I-Way - Network access equipment .

Unit-II **12 Hrs**

Network security and firewalls – client server network security – firewalls and network security - data and message security – encrypted documents and electronic mail .

Unit-III **12 Hrs**

Consumer Oriented E-Commerce - Consumer Oriented applications - Mercantile process model – Electronic payment systems: Types of Electronic payment systems - Digital token based Electronic payment systems – Smart cards and Electronic payment systems - Credit card based Electronic payment systems - Risk and E-payment Systems - Designing E-payment system.

Unit-IV **15 Hrs**

Inter organizational commerce and EDI: Electronic data interchange - EDI applications in business - EDI legal, security and privacy issues-EDI and E-commerce - EDI implementation, MIME and Value added networks: Value added networks -internet based EDI.

Unit-V **15 Hrs**

Advertising and marketing on the internet: Advertising on the internet - Charting the on-line marketing process - Consumer search and resource discovery - commerce catalogs or directories - information filtering - Software Agents: History of Software Agents - characteristics of Software Agents - The technology behind Software Agents .

Text Book

- R. Kalalkota and A.B. Whinston, *Frontiers of Electronic Commerce*, Addison Wesley, 2008.

Reference Books

- David Kosiur, *Understanding Electronic commerce*, Microsoft Press, 1997.
- SAILY CHAN, *Electronic Commerce Management*, John Wiley, 1998.

UCAM301/UCAM304 PROGRAMMING IN C++

Semester	**: III**	**Credit**	**: 4**
Category	**: Core IV**	**Hours/week**	**: 5**
Class & Major	**: II BCA**	**Total Hours**	**: 65**

Objectives:

To enable the students

- Learn the systematic way of solving problems
- Understand the different method of organizing large amounts of data
- Efficiently implement the different data structures
- Efficiently implement solutions for specific problems

UNIT – I **10 Hrs**

Definition of Data Structure – Abstract Data Types – Asymptotic notations – Arrays: Array as an abstract data type – Polynomial ADT: Representation – Polynomial addition – disadvantages of representing Polynomials by Arrays.

UNIT – II **12 Hrs**

Tacks and Queues: Stack and Queue ADT – Applications of Stacks and queues – Evaluation o expressions: Expression – Postfix Notation – Infix to Postfix – Multiple Stack and queues

UNIT – III **13 Hrs**

Linked Lists: Singly Linked Lists – Circular Lists – Linked Stack and Queues – Doubly Linked List – Recursive algorithms for lists – Copying a list – Reference Counts, shared and Recursive Lists – Applications of Linked Lists

UNIT – IV **15 Hrs**

Trees: Representation of Tees – Binary trees – Heaps- Binary Search Trees – Selection Trees – Graphs: Definitions – Representation – Graph Operations: DFS- BFS- Spanning trees- Connected and Biconnected Components.

UNIT – V **15 Hrs**

Sorting: Insertion Sort – Quick Sort – Merge Sort – Heap Sort – Search Structures: AVL trees – Top-Done Insertion and Deletion – Red – Black Trees: Searching – Top-Down Insertion – Bottom-up Insertion- Deletion.

Text Book

- Ellis Horowitz, Sartaj Sartaj Sahni, Dinesh Mehta, Data Structure in C++,Fifth Edition, Galgotia Publications, 2000.

Reference Book

- Seymour Lipschutz, Data Structures, fourth Edition, Tata Mcgrraw – Hill Publishing Company Limited, schaum's Outlines, New Delhi,1999.

UCAR302 PROGRAMMING IN C++ - PRACTICALS

(This course replaces UCAR301 Data Structure using C++ found in the Academic Council Booklet-II)

Semester: III **Credits : 3**
Category: Core Practical III **Hours/Week : 3**
Class & Major:II BCA **Total Hours : 39**

Objectives

- To enable the students to write simple application programs using C++
- To develop, compile and run simple to moderately complex C++ programs
- To understand the concepts of object oriented programming
- To develop programs based on the concept used in Data Structures.

C++ Programs

1. Classes and Objects
2. Functions and overloading
3. Arrays
4. Constructors and Destructors
5. Inheritance and Polymorphism
6. Pointers
7. File operations

Data Structure using C++

1. Implement PUSH, POP Operations of Stack Using Arrays.
2. Implement Add, Delete Operations of Queue Using Pointers.
3. Conversion of Infix to Postfix Using Stack Operation.
4. Addition of Two Polynomials using Arrays and Pointers.
5. Binary Tree Traversal Using Linked List (In -order, Pre-order, Post-order).
6. Breadth First Search.

UCAE203 WEB DESIGNING

(This course replaces UCAE201 Introduction to Information Technology found in the Academic Council Booklet-I)

Semester: II **Credits : 2**
Category: Non-Major Elective IV **Hours/week : 2T+2P**
Class & Major: I UG NME **Total Hours : 26T+26P**

Objectives

- To know the basics of Internet concepts
- To understand HTML and CSS tags with Java Script programming
- To know how to create a simple website

Unit-I **4 Hrs**

Introduction to Internet – History – WWW – IP Address – Domain Name System

Unit-II **6 Hrs**

Introduction to HTML - Headers - Linking - Working with Images - Ordered and Unordered Lists - HTML Tables - HTML Forms – CSS

Unit-III **6 Hrs**

JavaScript – Introduction - Advantages of Java Script - Data Types – Variables - Control Structures.

Unit-IV **5 Hrs**

Looping concepts - Functions – Arrays – Dialog Boxes

Unit-V **5 Hrs**

Photoshop – Using the Toolbox – Palettes – Creating a simple image – creating Banners - Creating buttons – Creating shapes & Logos – Creating Patterns and Creating brush.

Text Books

- Thomas. A. Powell, *Complete Reference: HTML*, Fourth Edition, Tata McGraw Hill Publications,2005.

- Adobe Press, *Adobe Photoshop* CS, Techmedia,2005.

Reference Book

- Deitel & Deitel, *Internet & World Wide Web How to Program*, Pearson Education,2000.

Practical **26Hrs**

a. Create a simple Page introducing you and modify it with bullet list.
b. Create Web Pages using Hyperlinks.
c. Put an existing image on a web page. Create table with data.
d. Create Web Page with CSS Formatting.
e. Write a script to create an array of 10 elements and find the total of it.
f. Write a function in JavaScript to reverse the string and check for palindrome.
g. Create simple calculator using form fields.
h. Photo Effect
   Discoloring, changing cloth and pattern, changing background, applying soft Effect
i. Text effect
   Creating shining text, Illumines text, transparent glass text, marquee, Digital bacher.
j. Create a digital clock Animation.

UCAE204 INTRODUCTION TO INFORMATION TECHNOLOGY

Semester: II **Credits : 2**
Category: Non-Major Elective IV **Hours/week : 4**
Class & Major: I UG NME **Total Hours : 52**

Objectives
To enable the students

- Understand about computer and its parts
- Know about concepts and principles of IT.
- Know about Operating System and System analysis and Design

UNIT – I **10 Hrs**

Introduction to computer systems: Introduction to computers – classification of digital computer system-Anatomy of a digital computer

UNIT – II **12 Hrs**

Numbers system-Memory Units-Auxiliary storage devices-Input devices-Output devices.

UNIT – III **10 Hrs**

Introduction to computer software-Operating systems-Programming language-Data processing.

UNTI-IV **10 Hrs**

Introduction to Telecommunication-computer network- communication systems-Distributed systems.

UNIT – V **10 Hrs**

Internet & World Wide Web –electronic mail-Intranet.

Text Book

- Alexis Leon, Mathews Leon, fundamentals of Information technology, Third Edition, Vikas Publication,2001.
-

Reference Books

- Alexis Leon and Mathews Leon, Introduction to Computes", second Edition, Leon tech World, 2003.
- Ram.B Computer fundamentals, Fourth Edition, New Delhi, New Age Publications, 2004.
- William stalling, Data and Computer Communicastion, Eight Edition, PHI New Delhi, 2006

UCAE302 INTERNET AND WORLD WIDE WEB

(This course replaces UCAE301 Internet Concepts found in the Academic Council Booklet-I)

Semester: III **Credit : 2**
Category: Non-Major Elective II **Hours/week : 4**
Class & Major: II UG NME **Total Hours : 52**

Objectives

- To understand the basic concepts of Email
- To create a new Email account and do all manipulations
- To search new concepts with Internet Search Engines

Unit-I **9 Hrs**

Internet Connection Concepts: What is Internet?-Computers on the internet-Servers, Clients and ports-Domain name system and DNS Servers- Internet Services- Connection to Dial-Up internet accounts: Dial- Up networking- Dial- Up Adapter- Internet and Modem properties-Internet connection wizard and make new connection wizard.

Unit-II **10 Hrs**

High Speed Connections: Contenders: ISDN-ADSL- Cable Modem Service- Wireless Alternatives-Choosing high Speed connection: Cost- Speed- Phone Line Issues- Remote Access-Choice of Provider- Intranets: What is an Intranet? - Components of an Intranet.

Unit-III **11 Hrs**

E-mail concepts: Receiving incoming messages- Sending outgoing messages-Ways of Accessing E-mail- E-mail Addressing: More about Host names- Special Address- Message Headers-Downloading E-mail: Working offline- Deleting messages from server-Formatted E-mail- Web based E-mail.

Unit-IV **11 Hrs**

Basic E-mail Commands: Common E-mail Tasks : Configuring E-mail Application-Receiving & Sending E-mail- Reading E-mail-Creating Messages- Filing Messages- Addressing E-mail-Sending & Receiving files by E-mail: Sending Attachments-Receiving Attachments- Online chatting & Conferencing concepts: Forms of Chat and Conferencing.

Unit-V **11 Hrs**

World Wide Web Concepts: Elements of web: Clients and servers-Web's Languages & protocols-Web pages and websites- Web Browsers: Browser Concepts- Browser Home pages and Start pages-plug-ins- Elements of Browser Window- Viewing Pages with a Browser- Using Browser for Mail, News or Chat.

Text Book

- Margaret Levine Young, *Internet: The Complete Reference*, Millennium Edition, Tata McGRAW –Hill Edition,2001

Reference Book

- Raymond Greenlaw, Ellen Hepp , *Fundamentals of the INTERNET and the World WideWeb*, Second Edition , Tata McGRAW –Hill Edition, 2005.

UCAE303 INTERNET CONCEPTS

(replaces UCAE301 Internet Concepts found in the Academic Council Booklet-I)

Semester: III **Credit : 2**
Category: Non-Major Elective II **Hours/week : 4**
Class & Major: II UG NME **Total Hours : 52**

Objectives:

To enable the students

- Know the basic concepts of Email concepts
- Create a new Email account and do all manipulation
- Search new concepts with Internet search Engines

UNIT – I **9 Hrs**

Internet Connection concepts: Definition of Internet – Computers on the internet – servers – Clients and ports – Domain name systems and DNs Servers – Internet Services – Connection to Dial – Up internet accounts – dial – Up networking – Dial – Up Adapter – Internet and Modem properties – Internet connection wizard – new connecting wizard.

UNIT – II **10 Hrs**

High speed Connections: Contenders – ISDN – ADSL – Cable Modem Service –n Wireless Alternatives – high speed connection – Cost – Speed – Phone Line Issues – Remote access – Choice of Provider – Definition of Intranet – Components of an Intranet.

UNIT – III **11 Hrs**

E-mail concepts: Receiving incoming messages – Sending messages – Ways of Accessing E-mail – E-mail addressing – Host names – Special Addresses – Message Headers – Downloading E- mail – Working offline – Deleting messages from server – Formatted E- mail – Web based E- mail.

UN IT – IV **11 Hrs**

Basic E –mail commands: Common E-mail Tasks – Configuring E-mail Application – Reading E-mail – Creating Messages – Filing Messages – Addressing E-mail – sending and Receiving files by E-mail – Sending Attachments – Receiving attachments- Online chatting and Conferencing concepts – Forms of Chat and Conferencing.

UNIT – V **11 Hrs**

World Wide Web Concepts: Elements of web – Clients and servers – Web Languages and protocols – Web pages and websites – Web Browsers – Browser Concepts - ?Browser Home Pages and Stars pages – Plug-ins – Elements of Browser Window – Viewing Pages with a Browser – Using Browser for mails News and Chat.

Text Books

- Margaret Levine Young, "Internet: The Complete reference", Millennium Edition, Tata Mc Graw Hill Edition ,2003.

Reference Books

- Raymond Greenlaw, Ellen Hepp, "Fundamentals of the INTERNET and the World Wide Web", Second Edition, Tata MC Graw Hill Edition, 2005.

COURSE PROFILE: MCA
(Replaces the Syllabi found in the Academic Council Booklet-II for Semesters I,II and III)

Semester	Category	Course Code	Course Title	Contact Week	Credit	
					Min	Max
I	Core I	PCAM103	Mathematical Foundation	4	4	4
	Core II	PCAM108	Marketing Management	4	3	3
	Core III	PCAM106	C Programming	5	4	4
	Core IV	PCAM107	Operating Systems	6	6	6
	Core Practical I	PCAR101	C Programming-Practicals	3	2	2
	Core Practical II	PCAR104	Office Automation -Practicals	3	2	2
	Non Major Elective I			5	4	5
			Total	**30**	**25**	**26**
II	Core V	PCAM205	Database Management System	5	4	4
	Core VI	PCAM206	Applied Statistics	5	4	4
	Core VII	PCAM207	Object Oriented Programming using C++	5	4	4
	Core VIII	PCAM208	Data Structures and Algorithms	4	4	4
	Core Practical III	PCAR203	Database Management System – Practicals	3	2	2
	Core Practical IV	PCAR204	Object Oriented Programming using C++ -Practicals	3	2	2
	Non Major Elective II			5	4	5
	Service Learning			-	1	1
			Total	**30**	**25**	**26**
III	Core IX	PCAM307	Financial Accounting	5	4	4
	Core X	PCAM308	Java Programming	5	4	4
	Core XI	PCAM309	Visual Programming and Web Hosting	4	4	4
	Core XII	PCAM310	Computer Networks and Network Security	5	4	4
	Core Practical V	PCAR304	Visual Programming -Practicals	3	2	2
	Core Practical VI	PCAR305	Java Programming-Practicals	3	2	2
	Value Education		Women studies	5	4	4
			Total	**30**	**24**	**24**

	Category	Course Code	Course Title	Contact Week	Credit	
					Min	Max
IV	Core XIII	PCAM406	Human Resource Management	4	4	4
	Core XIV (Recent Trend)	PCAM407	Cloud Computing	5	5	5
	Core XV	PCAM408	Research Methodology and OOAD	5	4	4
	Core XVI	PCAM409	Multimedia and its applications	5	4	4
	Core Practical VII	PCAR403	Case tools lab-Practicals	3	2	2
	Core Practical VIII	PCAR404	Multimedia and its applications-Practicals	3	2	2
			NET/SET	5	4	4
Total				**30**	**25**	**25**
V	Core XVII	PCAM506	Distributed Technology	5	5	5
	Core XVIII	PCAM507	Data Mining and Warehousing	5	4	4
	Core XIX (Recent Trend)	PCAM508	Wireless Technology	5	5	5
	Core XX	PCAM509	Operations Research	4	4	4
	Core XXI	PCAM510	Software Engineering	5	3	3
	Core Practical IX	PCAR501	Distributed Technology-Practicals	3	2	2
	Core Practical X	PCAR503	Mini project	3	3	3
Total				**30**	**26**	**26**
VI	Core Project I	PCAP601	Project	30	10	10
Grand Total				**180**	**135**	**137**

PG:

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit
II	IV	Non – Major Elective I	PCAE203	Web Designing	5	4
III	IV	Non – Major Elective II	PCAE303	RDBMS with SQL	5	4

PCAM106 C PROGRAMMING

(This course replaces PCAM101 Programming found in the Academic Council Booklet-II)

Semester: I **Credit : 4**
Category: Core III **Hours/Week : 5**
Class & Major: I MCA **Total Hours : 65**

Objectives

To enable the students

- Use the basic concepts of the C programming language to create computer applications.
- Design, build, execute and debug C applications.
- Use variables, arrays, strings, flow control statement, point and disk files in C.

UNIT – I **10 Hrs**

C fundamentals character set-identifier and keywords-data types-constants-variables-Declarations-Basic data types-Enumerated data types-Expressions- operators in C –Library function-managing input and output operations.

UNIT – II **10 Hrs**

C Control Structures: Decision making with IF statement-IF….ELSE statement- Nested IF statements-For statements-Do…while statements-while…do statements-GOTO statements-SWITCH statements.

UNIT – III **14 Hrs**

C function: Definitions – Prototypes – Passing Arguments – Recursion – Parameters or Arguments to function-Return Values – Prototype of function-Rules of using a function. Storage Classes: Automatic, External, Static, Register Variables – Scope of a variable.

UNIT – IV **15 Hrs**

Arrays-Defining and Processing-Passing arrays to functions-Multidimensional arrays – Arrays and Strings. Structures and Functions-Passing structures to Function-Unions-Bitwise operations.

UNIT – V **16 Hrs**

Pointers Declarations – Initialization – Passing Pointers to functions-pointers and arrays- Array of pointers-structures and pointers-Files: Creating, Processing, Opening and Closing data file. Dynamic Memory Allocation – Allocating a Block of memory: Malloc – Allocating Multiple Blocks of Memory – Altering the size of Block. C Preprocessor-Directives-Macros-Working with Several Files-Command Line Arguments.

Text Books

- Ashok N. Kamthane, "*Programming with ANSI*" Third Edition and Turbo Caparison Education, 2006.
- Balagurusamy "*Programming in ANSIC*", Third Edition, TMG, 2007.

Reference Books

- Gottfried. B. S., "*Programming with C*", Second Edition, Schaum Outline series, TMH, 2005.
- Kernighan B.W. and Ritchie D.M, "*The C Programming Language: ANSIC*" Version, Second Edition, and PHI/Pearson Education Pvt.Ltd, 2005.
- Somashekara, "*Programming in C*", Third Edition, PHI, 2006.
- Behrouz A. Forouzan and Richard. F. Gilberg, "*A Structured Programming Approach Using C*", Second Edition, Brooks-Cole Thomson Learning Publications, 2007.

PCAM107 OPERATING SYSTEMS

(This course replaces PCAM102 Web User Interface Design found in the Academic Council Booklet-II)

Semester: I **Credit : 6**
Category: Core IV **Hours/Week : 6**
Class & Major: I MCA **Total Hours : 78**

Objectives

- It deals with the fundamentals of Operating System
- It describes about the Principles of Operating System such as Process management, Memory management, and the File System.
- It also deals with the Philosophy of LINUX Operating System.

UNIT – I INTRODUCTION **15Hrs**

Definition of OS- Mainframe System - Desktop System- Multi processor System-Distributed-Clustered – Real time System – Handheld System – Operating System Structure – System Components-Services –System Calls –System programs –System Design and Implementation.

UNIT – II PROCESS MANAGEMENT: **15Hrs**

Concepts- Process Scheduling –Operations on Processes –Co –operating processes - Inter process Communications CPU Scheduling – Scheduling Concept- Criteria–Scheduling Algorithms – Multiprocessor Scheduling – Real time Scheduling.

UNIT – III PROCESS SYNCHRONIZATION **15Hrs**

Critical Section- Synchronization Hardware – Semaphores – Problems of Synchronization-Critical Regions- Monitors- OS Synchronization-Deadlocks: Characterization- Handling Deadlocks-Deadlock Prevention –Avoidance- Detection-Deadlock Recovery.

UNIT-IV MEMORY MANAGEMENT **15Hrs**

Swapping-Contiguous Memory Allocation- Paging-Segmentation-Segmentation with paging-Virtual Memory : Demand paging- Process creation-page replacement–Allocation of frames-Thrashing.

UNIT-V I/O AND FILE SYSTEMS **18Hrs**

File Concepts– Access Methods – Directory Structure–-Sharing – Protection – File System Structure -Directory Implementation – Allocation Methods – Free Space Management – Disk Scheduling – Case Study: Linux System

Text Books

- Bhatt, P.C., "*An Introduction to Operating Systems-Concept and Practice*", Prentice Hall of India.,2001.
- Derie, H.W, "*An Introduction to Operation system*", .2nd Edition, Pearson Education, 2002**.**

Reference Books

- Silberschatz and Galvin, "*Operating System Concepts*" , Addison Wesley,2007
- Andrew S. Tanenbaum , "*Operating System Design and Implementation*" , McGraw Hill, 2003.

PCAR101 C PROGRAMMING – PRACTICAL

Semester: I **Credits : 2**
Category: Core Practical I **Hours/Week : 3**
Class & Major: I MCA **Total Hours : 39**

Objectives:
To enable the students

- Use the basic concepts of the C programming language to create computer applications.
- Design, build, execute and debug C applications.
- Use variables, arrays, strings, flow control statement, point and disk files in C.

I. Summation of Series: **9 Hrs**

1. Sin(x), 2. Cos(x), 3. Exp(x) (Comparison with built in functions)

II. String Manipulation: **7 Hrs**

1. Counting the no. of vowels, consonants, words, white spaces in a line of text and array of lines.
2. Reverse a string AND check for palindrome.
3. Sub string detection, count and removal.

III. Recursion: **7 Hrs**

1. ${}^{n}P_{r}$, ${}^{n}C_{r}$
2. GCD of two numbers
3. Fibonacci series
4. Minimum and Maximum of numbers
5. Towers of Hanoi

IV. Matrix Manipulation: **8 Hrs**

6. Addition AND Subtraction
7. Multiplication
8. Transpose, and trace of a matrix
9. Determinant of a Matrix

V. Sorting and Searching: **8 Hrs**

1. Insertion Sort
2. Bubble Sort
3. Linear Search
4. Binary Search

PCAR104 OFFICE AUTOMATION – PRACTICAL
(This course replaces PCAR102 Web User Interface Design found in the Academic Council Booklet – II)

Semester: I **Credits : 2**
Category: Core Practical II **Hours/Week : 3**
Class & Major: I MCA **Total Hours : 39**

Objectives

- To develop students with the knowledge of document preparation, excel calculation and powerpoint presentation.

a) Word Processing **12 Hrs**

1. Document creation, Text manipulation with Scientific notations for any theme.
2. Table creation, Table formatting and Conversion (table into a text format.)
3. Prepare a Bio-Data and send it to 10 organizations for seeking job using Mail merge and Letter preparation.
4. Drawing - flow Chart
5. Prepare an advertisement for a company with the following specifications-
   Attractive page border -
   Use at least one Clip art-
   Design the name of the company using word art-
   Give details of the Company in brief.-
   Use bullets if necessary.

b) Spread Sheet **12 Hrs**

6. Prepare a result sheet of +2 examination
7. Formula - formula editor.
8. Sorting and Import / Export features.
9. Create a work sheet and insert an object or picture, line, XY, pie & bar chart and apply the protection of a document and sheet.
10. Create an EXCEL sheet for the student details of marks obtained in a particular subject and calculate the total, average and grade.

c) PowerPoint **15 Hrs**

11. Create a simple presentation using any theme.
12. Create a PowerPoint presentation about the "Computer Viruses" and apply an attractive Watermark or Straight Edge template and layouts.
13. Create Hyperlinks in PowerPoint Presentation.
14. Create a presentation and insert an object or picture, pie & bar chart and apply the sound effects.
15. Create a presentation and apply the animation effects.

PCAM302/PCAM205 DATABASE MANAGEMENT SYSTEM

Semester: II **Credits : 4**
Category: Core v **Hours/Week : 5**
Class & Major: I MCA **Total Hours : 52**

Objectives:
To enable the students

- It helps the students to acquire knowledge on basic AND practical skills on RDBMS
- It describes the data storage AND indexing techniques.
- It describes about the query Optimization and Transaction management.

UNIT – I INTRODUCTION **10 Hrs**

Database System vs. File Systems – View of Data – Data Models – Database Languages – Transaction Management – Database Systems Structure – History of Database Systems Database Systems Applications – Entity Relationship Model.

UNIT – II RELATIONAL DATABASE **11 Hrs**

SQL – Basic Structure – Set Operations – Complex Queries – DDL – Embedded SQL – Dynamic SQL – Other SQL Functions – Query by Example – Integrity and Security of Searching – Relational Database Design.

UNIT – III DATA STORAGE AND INDEXING **10 Hrs**

Storage AND File Structure – Disks – DAID – File Organization – Indexing AND Hashing – B+ TREE – B TREE – Static Hashing – Dynamic Hashing – Multiple Key Access.

UNIT – IV QUERY EVALUATION AND OPTIMIZATION **10 Hrs**

Query Processing – Selection Operation – Sorting – Join Operation – Evaluation of Expressions – Query Optimization.

UNIT – V TRANSACTION MANAGEMENT **11 Hrs**

Transaction Concept – Static Implementation – Concurrency control Processor – Desertion Handling – Recovery Systems – Recovery with concurrent Transactions – Shadow paging – Buffer Management – Case Studies – Oracle – Microsoft SQL Server.

Text Books

- Abraham Silberschartz, Hentry F. Korth and S. Sundharssan, "*Database System Concepts*" 4th Edition, Tata McGraw Hill, 2002.
- Raghu Ramakrishnan AND Jhonnesgerhrke, "*Data Base Management Systems*", Third Edition, McGrwaw Hill International Edition, 2000.

Reference Books

- Hector Garcia-Molina, Jeffrey D. Ullman and Jennifer Widom- "*Database System Implementation*", Fourth Edition, Pearson Education – 2000.
- Ramez Elmasri and Shamkant B. Navathe, "*Fundamental Database Systems*", Third Edition, Pearson Education, 2003.
- Silberschatz, Korth and Sudarshan, "*Database Management System*", Fifth Edition, Tata McGraw-Hill Publishing Company, 2003.

PCAM201/PCAM207 C++ PROGRAMING WITH OOPS

Semester: II **Credits : 4**
Category: Core VII **Hours/Week : 5**
Class & Major: I MCA **Total Hours : 65**

Objectives:
To enable the students

- Understand the concept of OOPS
- Enable the students to write simple programs using C++
- Understand the concepts of C++ and its application

UNIT – I **15 Hrs**

Concepts of OOP-Benefits of OOP-Application of OPP-Tokens, Expressions and Control Structures. Functions in C++-main Function-function Prototyping call by Reference-Return by Reference-Inline Function-Function Overloading-Classes and Objects-Specifying a class-Defining member function-Nesting of member function-arrays within a class-Memory Allocation for objects-Static Data members-Static Members -static Member Function-Arrays of Objects – Objects as Function arguments-Frindly function.

UNIT –II **10 Hrs**

Constructors and Destructors-Constructors-Parameterized constructors-Multiple Constructors in a Class-Dynamic Initialization of Objects-Copy Constructor-Dynamic constructors-Destructors-Operator Overloading and Type Conversions

UNIT – III **15 Hrs**

Inheritance-Introduction-defining Derived Classes-Single Classes- single Inheritance-Making a private – Member Inheritable-Multilevel, Multiple, Hierarchical, Hybrid Inheritance – Virtual Base classes-Pointers, Virtual Functions and Polymorphism

UNIT- IV **15 Hrs**

Managing console I/O Operations-C++ Streams-C++ stream Classes – Unformatted I/O Operations – Formatted Console I/O Operations- Managing Output with Manipulators Working with files.

UNIT – V10Hrs

Introduction-Classes for file Streams- Opening and Closing a File-File Models-Pointers and their Manipulators

Text Book

- Balagurusamy, E," Object Orinted Programming with C++", Fifth edition, TMH Publishing, 2009.

Reference Book

- Robert Lafore, Object Oriented Oriented Programming with C++, Fourth Edition, Galgotia,2007.

PCAM201/PCAM207 DATA STRUCTURES AND ALGORITHM

Semester: II **Credits : 4**
Category: Core VIII **Hours/Week : 4**
Class & Major: I MCA **Total Hours : 52**

Objectives:
To enable the students

- Understand the concept of data structure
- Enable the students to write simple programs with data structures concepts using C++
- Understand the concepts used in data structure and its application.

UNIT – I **10 Hrs**

Introduction to Data Structures – Overview- Types – Primitive and Non – Primitive Data structures and Operations. Arrays – Types- strings- Array of Structures – Sparse and Dense Matrices – Row-Major and Column – Major Arrays-Pointers and Arrays-Arrays of pointers – Pointers and strings. Recursion vs. Iterations- Towers of Hanoi – Advantages and Disadvantages.

UNIT – II **10 Hrs**

Stacks – Operations – Pointers and Stack –Representation of Arithmetic Expressions – Infix, Prefix and Postfix Notations – Evaluation of Postfix expression – Conversion of Expression – applications. Queues – Operations – Disadvantages – Implementation – types and applications.

UNIT – II **11 Hrs**

List operations – Linked list – memory Allocation and De-allocation - Operations – singly Linked List with and without Header – Operations – Circular Linked List – Doubly Linked list – circular Doubly list – Applications. Storage Management- Allocation techniques – Storage allocations – Storage release compaction – Garbage collections.

UNIT – IV **11 Hrs**

Trees – Terms – Binary Trees – Types – Representation – Operation and Traversal – Conversion of expression – Binary Search tree – threaded Binary tree – B- Tree – B+ Tree, Graph – Terminologies – Representation – Traversal – spanning trees.

UNIT – V **10 Hrs**

Sorting – Methods: Insertion – selection – Bubble- Quick – Tree – Merging List- Heap- Radix- Partition Exchange. Searching – Linear and Binary Search – Hashing Method – Hashing Function – Division – Mid-square – Folding – Length- Dependent – Digit Analysis Method .

Text Books

- Horowitz.e, sahni.s and Mehta, "Fundamentals of Data structures in C++", fifth edition, Galgotia -1999.
- Samanta D, " Classic Data structures", third Edition, PHI,2003

Reference Books

- Gregory L.heileman, "Data Structures, algorithms and Object Orinted Programming" Second Edition, Mc Graw Hill International Editions – 1996
- Jean-Paul tremblay and Paul G Sorenson, "An Introduction to Data Structures with Applications' Second Edition, Tata Mc Graw,, Hill Publishing company Ltd. New delhi: 1995

PCAM302/PCAR203 DATABASE MANAGEMENT SYSTEM

Semester: III **Credits : 2**
Category: CORE PRACTICAL III **Hours/Week : 3**
Class & Major: I MCA **Total Hours : 39**

Objectives:
To enable the students
Enable the students to know about simple queries and how to interact with database.
SQL
Simple queries using DDL,DML and DCL
SQL Aggregate functions
SET Operations
Views
Multiple Tables and Nested Queries.
JOIN operations

PL/SQL
PL/SQL Block
Functions
Procedures
Triggers
Cursors.

PCAR204 OBJECT ORIENTED PROGRAMMING USING C++

Semester : II **Credits : 2**
Category : Core PRACTICAL IV **Hours/Week : 3**
Class & Major: I MCA **Total Hours : 39**

Objectives:
To enable the students
Develop the student to write programs using Data structure concept
Implement PUSH, POP Operations of Stack Using Arrays.
Implement add, Delete Operations of Queue Using Pointers.
Implement Add, delete Operations of Queue Using Pointers.
Postfix expression Evaluations.
Conversion of Infix to Postfix Using Stack Operation.
Addition of Two Polynomials using Arrays and Pointers.
Creation, Insertion and Deletion Using Doubly Linked List.
Binary Tree Traversal Using Linked List (In- order, Pre-order,).

PCSX201/PCAX201 INTRODUCTION TO INFORMATIONTECHNOLOGY

Semester : II **Credits : 1**
Category : Service Learning **Total Hours : 40**
Class & Major : I MCA

Objectives:
To enable the students
Develop the service attitude
Develop primary school teaching skills.
Inculate interpersonal communication

UNIT – I INTRODUCTION TO COMPUTER **5Hrs**

Introduction to Computer – CPU Parts – Hardware and Software – Input devices – Output Devices – storage devices – Operating System – How to Operate the Computer – Types of Computer.

Activities:
Animation session for computer parts – Handling Mouse.

UNIT – II MS WORD & EXCEL **10 Hrs**

Ms Word: MS Word Creation –Formulas – Commands – Working with worksheets – Creating a Chart – Data Sort – Function.

Activities:

To Open & create Ms – Word document, To format & align the document, To create the table, To insert chart, Pictures, Header & footer – Excel sheet creation and opening, Charts, clipart, pictures insertion, Using different formulas, Basic calculations are implemented using tools. Scientific calculator used for complex calculations.

UNIT – III MS POWERPOINT & APPLICATION SOFTWARE **8 Hrs**

Ms Paint – Toolbar and their icons – Navigation in Power point – slide show – Custom Animation.

Application software – ms paint – Notepad, calculator

Activities:

Slide Presentation – Painting and coloring, Using tools in MS Paint, To open & create notepad, Font formatting & align the document.

UNIT – IV MS PROJECT **5 Hrs**

Tasks – links – constraints – resources – assignment – costs – formatting viws.

Activities

To create

Project file

UNIT – V INTERNET CONCEPTS **12 Hrs**

Network and its types – Search Engine – E mail concepts –Creating mail ID-sending & Receiving mails – Formatting mails –attachment files – Blogs, Group Mails, Metasearch Engines – Java Applet.

Activities:

T create E-Mail Id, Sending and receiving messages , to attach files.

Text books

- Sanjay Saxena, A first course in computer, Cikas Publications, New Delhi, 2000.
- Thomas a.Powell, Complete reference HTML, 4th Edition, Tata Mc graw Hill, New Delhi, 2000

Reference Books

- William stalling, Data and Computer Communication, second Edition, PHI, New Delhi, 2001.
- Ram., b, Computer fundamentals, 3rd Ediion New Age Publictions, New Delhi, 2002.
- www.stylusinc.net/ms project tutorial/project management .shtml.

Target Group: VI to VIII(Govt school students)

Evaluations Components:

S.NO	COMPONENTS	MARKS
1.	Participation & Involvement	20
2.	Communication skills	20
3.	Interpersonal skills/usage of teaching aids	20
4.	Report Presentation	20
5.	reflection	20
Total		**100**

PCAM308 JAVA PROGRAMMING

(This course replaces PCAM301 Java Programming found in the Academic Council Booklet-II)

Semester: III	**Credits**	**: 4**
Category: Core X	**Hours/Week**	**: 5**
Class & Major:II MCA	**Total Hours**	**: 65**

Objectives

- To develop the students to write programs in Java Application and Applets.
- To understand the web oriented programming using servlet, JSP and Java Beans.

Unit – I **10Hrs**

Classes and objects- Inheritance - Packages and Interfaces – Exception Handling – overloadingmethods – method overriding.

Unit – II **15Hrs**

Multithreaded Programming- Synchronization – Applets class – AWT classes – Windows fundamentals – Frame windows – Working with graphics – AWT controls – Layout Managers.

Unit – III **10 Hrs**

Database Access: Creating a Web Page from a Database Query – Connection Pooling – Getting the Column number right – The JDBC- ODBC Bridge – Registering a JDBC Driver – Using a Prepared statement – Handling Transactions with Commit and Rollback – Using Database MetaData for Generic code – Analyzing the columns in a ResultSet – Detecting Null data – Creating HTTP sessions.

Unit – IV **15Hrs**

Java Server Pages: Expressions – Scriptlets – Implicit Objects – Declarations – Comments – Including files – Forwarding Requests – The page Directive – Using JavaBeans with JSP.

Unit - V **15 Hrs**

JavaBeans: What is Java Beans – Advantages of Java Beans – Application Builder Tools – BDK – JAR Files – Introspection – Developing a simple bean – Using bound properties.

Text Books

- Herbert Schildt, *The Complete Refernce*, Tata McGraw Hill,2005.
- Phil Hanna, *Instant Java Servlets*, Tata McGraw Hill, New Delhi,2000.

Reference Books

- Deitel AND Deitel , Java How to program , Prentice Hall , 4 th Edition, 2000.
- Gary Cornell and Cay S. Horstmann, Core Java Vol 1 and Vol 2, Sun Microsystems Press, 1999.

PCAM309 VISUAL PROGRAMMING AND WEB HOSTING

(This course replaces PCAM302 Database Management System found in the Academic Council Booklet-II)

Semester:III **Credit : 4**
Category: Core XI **Hours/Week : 4**
Class & Major:II MCA **Total Hours : 52**

Objectives

- The students will be able to design the visual basic project.
- To develop creativity in designing the project.
- Make the students to analyze the problem.
- Developing the students to design the model of the project.

Unit – I **8 Hrs**

Customizing a Form – Command Buttons – Image Controls – Text Boxes – Labels – Message Boxes – Variables – Data Types – Conditionals Statements – Looping Statements.

Unit – II **12 Hrs**

Built– in Functions – Functions and Procedures – Control Arrays – Combo Boxes – List Boxes – Rich Textbox – Flex Grid Control – Dialog Boxes – Menus – MDI Forms – Working with ADO – Active X Controls.

Unit – III **10 Hrs**

Architecture of Microsoft.NET – New features in .NET 3.5 – keyword – Data Types – Operators – Variables – Constants – Data Type Conversion – Arrays – Enumerations – Structures – Conditional – Looping Statements – Exception handling.

Unit – IV **12 Hrs**

Interacting with Controls: Label – Textbox – Rich Textbox – Button – List box – Checkbox – Radio Button – Group box – Panel – CheckedList Box – Combo Box – List View – Picture Box – Tab – ImageList – Timer – ProgressBar – Status Bar.

Unit – V **10 Hrs**

Introduction to Web Hosting – Types of Web Hosting – Web Hosting Providers – Host Domains –Host Technologies- Host Database - Web hosting Services.

Text Books

- Andrew parsons, Nick Randolph, *Professional Visual Studio 2005, Wrox publications,* Wilky India, 2007.
- *Visual studio 2005 Programming Black Book*, Kogent Learning Solutions Inc, 2008

Reference Books

- Matthew Drovin, *Web Hosting and Website Development,* A Guide to Opportunities.2007.
- Brian siler and Jeff sports., *Using Visual Basic 6*, New Delhi, Prentice Hall India, 2002.
- Pappar and Murray., *Visual C++: The Complete Reference*, New Delhi, Tata McGraw Hill, 2000.

- Viker Gupta , *Comdex . NET Programming*, Dreamtech press. 2001
- Gary Cornell., *Visual Basic 6 from the Ground up,* Tata McGraw Hill, 1999.

PCAM310 COMPUTER NETWORKS AND NETWORK SECURITY

(This course replaces PCAM303 Soft Computing found in the Academic Council Booklet-II)

Semester: III **Credit : 4**
Category: Core XII **Hours/Week : 5**
Class & Major:II MCA **Total Hours : 65**

Objectives

- This course gives an insight into various network models and the general network design issues and related algorithms.
- To create networks idea to the student about the telecommunication concepts.
- To understand network model about the LAN, WAN.

Unit– I **13 Hrs**

A Communications model – Data Communications – Data Communications Networking – Need for a Protocol Architecture – The TCP/IP Protocol Architecture – Concepts and terminology – Analog and Digital – Transmission – Transmission impairments – Transmission Media.

Unit– II **12 Hrs**

Data Encoding - Digital Data Digital signals, Digital data Analog signals, Analog Data Analog Signals Data Communications Interface: Asynchronous and Synchronous Transmission – Types of errors –Error Detection-Error Corrections-Line Configuration.

Unit– III **15 Hrs**

Data link Control: Flow controls – Error Control – High level Data link control (HDLC) – Multiplexing – Frequency Division multiplexing – Synchronous time – Division Multiplexing – Statistical Time Division multiplexing.

Unit– IV **10 Hrs**

Security attacks – security services – a model for internetwork security – conventional encryption model – steganography – the data encryption standard.

Unit– V **15 Hrs**

Principles of public key cryptosystems – the RSA algorithm – key management – Diffie-Hellman key exchange – prime and relatively prime numbers – Fermat's ad Eulers's theorems – testing of primality – Euclid's algorithms – the Chinese remainder theorem.

Texts Books

- William Stallings, *Data and Computer Communications,* Fifth Edition, Prentice Hall of India, 1997.
- William Stallings , *Cryptography and network security,* 4/E , PHI, 2006

Reference Books

- Forouzan.B., *Introduction to Data Communications in Networking*, New Delhi, Tata McGraw Hill, 1998.
- Ulysess D.Black, *Data communications and Distributed Networks*, Third Edition 1997, Prentice Hall of India,1997.
- Prakash C.Gupta, *Data Communications*, Prentice Hall of India, 1996.
- Baxer, *Networking Security*, McGraw Hill, 1996.
- Charles P.Pleeger, *Security in Computing*, PHI, 1989.

PCAR305 JAVA PROGRAMMING – PRACTICAL

(This course replaces PCAR301 Java Programming found in the Academic Council Booklet-II)

Semester: III **Credits : 2**
Category: Core Practical VI **Hours/Week : 3**
Class & Major:II MCA **Total Hours : 39**

Objectives

- To enable the students to develop Java Application program and Applet program**.**
- To help the student to acquire practical knowledge on Advanced Java programming.
- To enable the students to have deep knowledge in the network programming on Java Bean, Servlets.

1. Program to illustrate the use of overloading and overriding.
2. Program to implement the concept of Interfaces and packages.
3. Generate the program using exceptions handling mechanism.
4. Application using synchronization such as Thread based class
5. Implement the file operations.
6. Program using Applets and AWT.
7. Write a Servlet to display IP address and port number of a server
8. Create a Servlet program using JDBC connection.
9. Write a Servlet program to keep track previous request in session concept.
10. Create a JSP page using Session Java beans.

PCAE203 WEB DESIGNING

Semester: II **Credits : 4**
Category: Non-Major Elective IV **Hours/week : 5**
Class & Major: I PG NME **Total Hours : 65**

Objectives

- To know the basics of Internet concepts
- To understand HTML and CSS tags with Java Script programming
- To know how to create a simple website

Unit-I **4 Hrs**

Introduction to Internet – History – WWW – IP Address – Domain Name System

Unit-II **6 Hrs**

Introduction to HTML - Headers - Linking - Working with Images - Ordered and Unordered Lists - HTML Tables - HTML Forms – CSS

Unit-III **6 Hrs**

JavaScript – Introduction - Advantages of Java Script - Data Types – Variables - Control Structures.

Unit-IV **5 Hrs**

Looping concepts - Functions – Arrays – Dialog Boxes

Unit-V **5 Hrs**

Photoshop – Using the Toolbox – Palettes – Creating a simple image – creating Banners - Creating buttons – Creating shapes & Logos – Creating Patterns and Creating brush.

Text Books

- Thomas. A. Powell, *Complete Reference: HTML*, Fourth Edition, Tata McGraw Hill Publications,2005.
- Adobe Press, *Adobe Photoshop* CS, Techmedia,2005.

Reference Book

- Deitel & Deitel, *Internet & World Wide Web How to Program*, Pearson Education,2000.

Practical **26Hrs**

k. Create a simple Page introducing you and modify it with bullet list.
l. Create Web Pages using Hyperlinks.
m. Put an existing image on a web page. Create table with data.
n. Create Web Page with CSS Formatting.

o. Write a script to create an array of 10 elements and find the total of it.
p. Write a function in JavaScript to reverse the string and check for palindrome.
q. Create simple calculator using form fields.
r. Photo Effect

Discoloring, changing cloth and pattern, changing background, applying soft Effect

s. Text effect

Creating shining text, Illumines text, transparent glass text, marquee, Digital bacher.

t. Create a digital clock Animation.

PCAE303 RDBMS WITH SQL

(This course replaces PCAE301 Web Designing found in the Academic Council Booklet-II)

Semester: III **Credit : 4**
Category: Non-Major Elective II **Hours/Week : 3T + 2P**
Class & Major:II PG NME **Total Hours : 39T + 26P**

Objectives

- It helps the students to acquire knowledge on basic AND practical skills on RDBMS with SQL.
- It describes the data storage AND indexing techniques.
- It describes about the query Optimization and Transaction management.

Unit I: **07Hrs**

The evaluation of database systems-Architecture of a DBMS – The future of database system-Relational data model-Database models-ER diagrams

Unit II: **09Hrs**

Design of Relational database-Normal forms-Relationship among Normal forms- Operations in the Relational model-set operations of relations-Projection-Selection-Intersection-Union

Unit III: ` **07Hrs**

Relational Model: Structure of Relational Databases - Fundamental Relational-Algebra Operations Additional Relational-Algebra Operations- Extended Relational-Algebra Operations - Null Values - Modification of the Database.

Unit IV: **07Hrs**

Overview of SQL: SQL Language- Role of SQL. SQL Basics: Names-Data types-Constants: Numeric, String, Date and Time, Symbolic-Expressions-Build in functions-Missing Data.

Unit V: **09Hrs**

Simple Queries: SELECT statement-Query results-Calculated columns-selecting all columns-Duplication rows-Row selection. Comparison Test: Range, Set Membership, Pattern matching, Null value-Component search conditions (AND, OR and NOT)

Text Books:

- Jeffrey D.Ullman and Jennifer Widom ,"*A First course in database systems*", Addison Wesley Longman Pte.Ltd., Delhi-2001.
- James R.Groff, Andrew J.Oppel & Peul N.Weinberg,*The complete reference SQL*-McGraw Hill, 3rd Edition, 2011.

Reference Books:

- Ramez Elmasri-Shamkant B.Navathe ,*Fundamentals of database systems*", 3rdEdition, Addison Wesley Longman Pte.Ltc-Delhi 2001.
- James R.Groff, Andrew J.Oppel & Peul N.Weinberg ,*The complete reference SQL*, McGraw Hill, 2nd Edition, 2003.

PRACTICALS **26Hrs**

RDBMS

1. Table creation, insertion, deletion & updation.
2. Uses of Select statement for Queries using AND, OR, NOT, WHERE clause.
3. Sorting and grouping.
4. DML Aggregate function
5. DML set operations

SQL

1. Simple queries using DDL, DML and DCL
2. Built-in functions of SQL.
3. Nested Queries in SQL.

COURSE PROFILE: B.Sc. ISM

(Replaces the Syllabi found in the Academic Council Booklet-II for Semesters I,II and III)

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit	
						Min	Max
I	Part-I	Language	UTAL101/ UTAL102/ UFRL101/ UHIL101	Basic Tamil – I/ Advanced Tamil – I/ French Hindi	4	2	3
	Part-II	English	UENL101/ UENL102	Basic English-I/ Advanced English-I/	4	2	3
	Part-III	Core I	UISM104	Enterprise Resource Planning	5	5	5
	Part-III	Core II	UISM105	Office automation and HTML	4	3	3
	Part-III	Core Practical I	UISR102/ UCAR102	Office Automation and HTML-Practicals	3	3	3
	Part- III	Allied I	UMAA107	Statistical Methods	6	4	4
	Part-IV	Soft skills			2	1	1
	Part-IV	Value Education			2	1	1
Total					**30**	**21**	**23**
II	Part-I	Language	UTAL201/ UTAL202/ UFRL201/ UHIL201	Basic Tamil – II/ Advanced Tamil – II/ French Hindi	4	2	3
	Part-II	English	UENL201/ UENL202	Basic English-II/ Advanced English-II/	4	2	3
	Part-III	Core III	UISM203	Programming in C	6	5	5
	Part-III	Core Practical II	UISR202/ UCAR202	Programming in C-Practicals	3	3	3
	Part-III	Allied II	UBAA201	Business Communication	5	5	5
	Part-IV	Non Major Elective			4	2	2
	Part-IV	Soft skills			2	1	1
	Part-IV	Value Education			2	1	1
	Part-V	Extension Programme / Physical Education			-	1	2
Total					**30**	**22**	**26**
III	Part-I	Language	UTAL301/ UTAL302/ UFRL301/ UHIL301	Basic Tamil – III/ Advanced Tamil – III/ French Hindi	4	2	3
	Part-II	English	UENL301/ UENL302	Basic English-III/ Advanced English-III/	4	2	3
	Part-III	Core IV	UISM303	Object Oriented Programming using C++	6	5	5
	Part-III	Core Practical III	UISR303	Object Oriented Programming using C++-Practicals	3	3	3
	Part-III	Allied III	UCOA301	Financial Accounting I	5	4	4
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Soft skills			2	1	1
	Part-IV	Value Education			2	1	1
Total					**30**	**20**	**22**

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit	
						Min	Max
IV	Part-I	Language	UTAL401/ UTAL402/ UFRL401/ UHIL401	Basic Tamil – IV/ Advanced Tamil – IV/ French Hindi	4	2	3
	Part-II	English	UENL401/ UENL402	Basic English-IV/ Advanced English-IV/	4	2	3
	Part-III	Core V	UISM402	Programming in JAVA	6	6	6
	Part-III	Core Practical IV	UISR402	Programming in JAVA-Practicals	3	3	3
	Part-III	Allied IV	UCOA401	Financial Accounting II	5	5	5
	Part-IV	Non-Major Elective			4	2	2
	Part-IV	Soft skills			2	1	1
	Part-IV	Value Education			2	1	1
	Part- V	Extension Programme / Physical Education			-	-	2
		Summer training					
Total					**30**	**22**	**26**
V	Part-III	Core VI	UISM501	Visual Programming	4	4	4
	Part-III	Core VII	UISM503	Data Communication Networks	4	4	4
	Part-III	Core VIII	UISM507	Data Mining and Warehousing	4	4	4
	Part-III	Core IX	UISM508	Relational Database Management Systems	4	4	4
	Part-III	Core Practical V	UISR502	Visual Programming & RDBMS	3	3	3
	Part-III	Allied Optional			5	4	4
	Part-IV	Soft skills			2	1	1
	Part-IV	Non-Major Elective			4	2	2
Total					**30**	**26**	**26**
VI	Part-III	Core X	UISM601	Object Oriented Analysis and Design	4	4	4
	Part-III	Core XI	UISM603	E-Commerce & its Applications	4	4	4
	Part-III	Core XII	UISM605	Comprehensive Viva-Voce	-	1	1
	Part-III	Core XIII	UISM606	Web Programming	5	5	5
	Part-III	Core XIV	UISM607	Information System Management	4	4	4
	Part-III	Core Practical VI	UISR602	Web Programming –Practicals	3	3	3
	Part III	Core Practical VII	UISP601	Project	3	3	3
	Part-III	Major-Optional	UISO604/ UISO605	Cloud Computing/ Mobile Computing	5	4	4
	Part-IV	Soft skills			2	1	1
Total					**30**	**29**	**29**
Grand Total					**180**	**140**	**151**

ALLIED OPTIONAL -ISM

Semester	Part	Category	Course Code	Course Title	Contact Week	Credit
V	III	Allied Optional	UISA502	Visual Programming	5	4

UISM104 ENTERPRISE RESOURCE PLANNING

(This course replaces UISM101 Programming in C found in the Academic Council Booklet-II)

Semester : I **Credit : 5**
Category : Core I **Hours/Week : 5**
Class & Major:I ISM **Total Hours : 65**

Objectives

- To gain knowledge about business process.
- To gain knowledge about Marketing, Accounting, Production and HR information.
- To Inculcate knowledge Human Resource process

Unit I **12 Hrs**

Business function and business process: Functional areas and business process- functional area of operations- Business process- Marketing Sales- Supply chain management- Accounting and finance- Human Resource- Functional area of information system- The development of ERP system SAP R/3- New Directions in ERP- Significance and benefits of ERP software and system.

Unit II **10 Hrs**

Marketing information system and sales order process in ERP: Sales and distribution in ERP- Pre sales activities- Sales order processing- inventory sourcing- Delivery- Billing- Payment- Customer relationship management- benefits of CRM.

Unit III **15 Hrs**

Production and supply chain management information system: Production overview- The production planning process- The SAP ERP approach to production planning- Sales forecasting- Sales and operation planning- Demand Management- Material requirement planning in SAP ERP- ERP and supplier- Supply Chain.

Unit IV **15 Hrs**

Accounting in ERP: Accounting activities- Using ERP for accounting information- operational decision making problem- Credit management- Industrial Credit management in SAP ERP- Product profitability analysis- Management reporting with ERP system- Document flow for customer service.

Unit V **13 Hrs**

Human resource process in ERP: HR with ERP- Advance HR features- Time Management- Payroll- Travel Management- Training and Development- Management by objectives- ERP process modeling.

Text Books

- Ellen Monk and Bret Wagner ., " *Enterprise Resource Planning*" 3rd edition- MGH. 2008.
- Pankaj Sharma." *Enterprise Resource Planning",*APH Publishing ,First edition,2004

Reference Books

- Sadagopan S., "*Enterprise Resource Planning – A Managerial Perspective*", Tata McGraw Hill, First Edition, 2011.
- Daniel E.O'Leary,"*Enterprise Resource Planning systems",*Cambridge University,First Edition,2000.

UISM105 OFFICE AUTOMATION AND HTML

(This course replaces UISM102 Fundamentals of Information Technology found in theAcademic Council Booklet-II)

Semester : I **Credit : 3**
Category : Core II **Hours/week : 4**
Class & Major:I ISM **Total Hours : 52**

Objectives

- To apply the applications of computers in commerce field.
- To understand the concept of office automation
- To introduce the basics of computer hardware and software, concept of programming

Unit-I **9Hrs**

Introduction to Computer- Basic anatomy of computer – History - Input and Output unit - Data Representation - windows –Types of Network .

Unit –II **10Hrs**

Ms Office:Introduction -Word Basics - Formating toolbar - Picture - Tables – Templates - Mail merge-Macros. Ms-PowerPoint: Introduction - Toolbar – command and their icons – Navigation in powerpoint -Slide show - Custom Animation.

Unit-III **12 Hrs**

Ms-Excel:Introduction – Menus – FormulaTransaction – Commands - Toolbars and their icons- Formatting text - working with worksheet - creating a Chart - Data Sort – Functions.

Unit-IV **12 Hrs**

Ms-Access:Introduction – Database-Menus -Table creation -Wizard -Reports- Internet- Search engine- E-mail-Security.

Unit-V **9Hrs**

Introduction to HTML: Document types – Rules of HTML – Core HTML: Headings – Paragraphs and Breaks – Divisions and centering – List – Linking in HTML – HTML fonts and colors – Frames: Frame layouts – Floating Frames.

Text Books

- Sanjay Saxena , *A First course in computers* , Third Edition ,New Delhi, 2003.
- Thomas A.powell, *Complete Reference HTML*, Fourth Edition, McGraw Hill Publishers, Osborne, 2003.

Reference Books

- William Stalling, *Data and Computer Communication*, Eighth Edition PHI, New Delhi , 2007.
- Ram.B, *Computer fundamentals*, New Age Publications, New Delhi, 2007.

UISR102 / UCAR102 OFFICE AUTOMATION & HTML-PRACTICAL

Semester : I **Credit : 3**
Category : Core Practical I **Hours/Week : 3**
Class & Major : I ISM **Total Hours : 39**

Objectives:
To enable the students

- Develop a students with the knowledge of document preparation, Excel calculation and power point presentation.
- Learn the basic HTML tags for creating web pages.

MS WORD **10 Hrs**

7. Text Manipulation and Formatting
8. Usage of Spell check and Find and Replace, Numbering & Bulleting
9. Picture Insertion & Alignment, Header & footer
10. Creation of Templates & document using Templates
11. Mail Merge Concepts
12. Creation of Tables & formatting tables

MS EXCEL **10 Hrs**

6. Creation of Worksheet & Aligning, editing Data in cell
7. Excel Function (Mathematical, Date, Time etc.,)
8. Change of column width & row Width, Inserting, deleting Rows & Columns
9. Drawing Borders Around Cells
10. Creation of Charts & controlling the Appearance of Chart

MS POWERPOINT **10 Hrs**

5. Creating, saving, closing Presentation
6. Changing slide Layout
7. Inserting & working with Clip-Arts
8. Applying Transition & animation Effects with Slide show

HTML **10 Hrs**

7. Creating a HTML page using (<html>,<head>,<body> tags)
8. Working with Formatting tags (<b>,<i>,<u>,
,<p> and color size and marquee tags)
9. Creating ordered list and unordered list
10. Inserting Images and Alignment using HTML tags
11. Creating Tables and formatting Tables
12. Creation of forms (text box, combo box etc….) and frame sets

UISM203 PROGRAMMING IN C

(This course replaces UISM201 Fundamentals of Computer found in the Academic Council Booklet-I)

Semester : II **Credit : 5**
Category : Core III **Hours/week : 6**
Class & Major : I ISM **Total Hours : 78**

Objectives

- To introduce the basic concepts of the C programming language to create computer applications.
- To Design, build, execute and debug C applications.
- To apply variables, arrays, strings, flow control statement, point and disk files in C applications.

Unit- I **15 Hrs**

C fundamentals: character set – Identifiers and keywords – data types – constants – variables – declaration – expression – statements. Operators and Expression: arithmetic operators – unary operators – relational and logical operators – assignment operators – conditional operators and library function.

Unit -II **15 Hrs**

Data input and Output statements: getchar and putchar functions – scanf and printf function – more about scanf and printf functions. Control statements: if-else, while, do-while, for-nested control structure – switch – break –continue- comma operator – goto statement.

Unit- III **16 Hrs**

Functions: definition – accessing and function – function prototype –passing argument to a function – recursion. Program structure: storage classes – automatic variables – external variables – static variable. Arrays: definition of array – processing array- passing array to function – multidimensional arrays – arrays and strings.

Unit- IV **17 Hrs**

Pointers: Fundamentals – pointer declaration – passing pointer to a function – array of pointers- Structure and Unions: Definition of structure – processing structure – user defined data types- structure and pointers - passing structure to function – self referential structure- Unions - Bit wise operations.

Unit- V **15 Hrs**

Data files: opening and Closing a data file – creating data file – processing a data file – unformatted data file. The Preprocessor: Definition of Macros – Macro Substitution – File Inclusion – Compiler Control Directives.

Text Books

- Balagursamy E., *Programming in ANSI C, 3 rd Edition*, Tata McGraw hill, 2009.
- Schildt, H.C: *The Complete Reference*, 4th Edition, TMH Edition, 1999.

Reference Books

- Gottfried, B.S,*Programming with C*, Second Edition, TMH Pub. Co. Ltd., New Delhi 1996.
- Kanetkar Y.*Let us C*, BPB Pub., New Delhi, 1999.

UCAR202 / UISR202 PROGRAMMING IN C-PRACTICAL

Semester : II **Credit : 3**
Category : Core Practical II **Hours/Week : 3**
Class & Major : I BCA **Total Hours : 39**

Objectives:
To enable the students

- Use the basic concepts of the C programming language to create computer applications.
- Design, build, execute and debug C applications.
- Use variables, arrays, strings, flow control statement, point and disk files in C applications.

I. Summation of Series: **9 Hrs**

1. Sin(x), 2. Cos(x), 3. Exp(x) (Comparison with built in functions)

II String Manipulation **9 Hrs**

1. counting the no. of vowels, consonants, words, white spaces in a line of tect and array of lines.
2. Reverse a string & check for palindrome.
3. Sub string detection, count and removal.

III Recursion **7 Hrs**

1. ${}^{n}P_{r}$, ${}^{n}C_{r}$
2. Gcd of two numbers
3. Fibonacci series
4. Minimum and Maximum of numbers
5. Towers of Hanoi

IV Matrix Manipulation **8 Hrs**

1. Addition & Subtraction
2. Multiplication
3. Transpose, and trace of a matrix
4. Determinant of Matrix

V Sorting and Searching: **8 Hrs**

- Insertion Sort
- Bubble Sort
- Linear Search
- Binary search

UISM303 OBJECT ORIENTED PROGRAMMING USING C++

(This course replaces UISM301Object oriented programming using C++ found in the Academic Council Booklet-II)

Semester : III **Credit : 5**
Category : Core IV **Hours/week: 6**
Class & Major:II ISM **Total Hours: 78**

Objectives

- To understand the concepts of object oriented programming
- To enable the students to write simple application programs using C++
- To develop, compile and run simple to moderately complex C++ programs

Unit -I **15 Hrs**

Principles of procedure oriented programming and object oriented programming-Concepts, Benefits and Application of Object Oriented Programming-Tokens, Expressions and Control Structures Functions in C++-Main Function-Function Prototyping-Call by Reference-Return by Reference-Inline Function-Function Overloading.

Unit -II **15 Hrs**

Classes and Objects-Specifying a Class-Defining member function-Nesting of member function-Arrays within a class-Memory Allocation for objects-Static Data members-Static Member Function-Arrays of Objects-Objects as Function arguments-Friend Function.

Unit -III **16 Hrs**

Constructors and Destructors-Constructors-Parameterized Constructors-Multiple Constructors in a Class-Dynamic Initialization of Objects-Copy Constructor-Dynamic Constructors-Destructors-Operator Overloading and Type Conversions.

Unit -IV **16 Hrs**

Inheritance-Introduction-Defining Derived Classes-Single Inheritance-Making a Private Member Inheritable-Multilevel, Multiple, Hierarchical, Hybrid Inheritance –Virtual Base Classes-Pointers, Virtual Functions and Polymorphism.

Unit -V **16 Hrs**

Managing Console I/O Operations-C++ Streams-C++ Stream Classes-Unformatted I/O Operations-Formatted Console I/O Operations-Managing Output with Manipulators-Working with Files-Introduction to Classes - File Streams - Read, Write records into file -File Modes-File Pointers and their Manipulators-Templates.

Text Book

- Balagurusamy E. ,*Object Oriented Programming with C++*, TMH Publishing, 2009

Reference Book

- Robert Lafore , *Object Oriented Programming with C++*, Galgotia, TMH Publishing, 2007.

UISR303 OBJECT ORIENTED PROGRAMMING USING C++ - PRACTICAL

(This course replaces UISR301Object oriented programming using C++ found in the Academic Council Booklet-II)

Semester : III **Credit : 3**
Category : Core Practical III **Hours/Week : 3**
Class & Major:II ISM **Total Hours : 39**

Objectives

- To enable the students to write simple application programs using C++
- To develop, compile and run simple to moderately complex C++ programs
- To understand the concepts of object oriented programming

C++ Programs

1. Classes and Objects
2. Functions and overloading
3. Array addition and subtraction
4. Arrays using functions
5. Constructors
6. Constructors overloading
7. Destructors
8. Type conversion and operator overloading
9. Inheritance
10. Pointer ,virtual functions
11. Polymorphism
12. File operations
13. Templates