VELLALAR COLLEGE FOR WOMEN (AUTONOMOUS)

ERODE – 12

Department of Computer Applications

B.C.A 2015-2016 onwards

Course contents, Scheme of Examination, Credits and Syllabus (for students admitted during 2015-2016 and onwards)

DEPARTMENT OF COMPUTER SCIENCE

Bachelor of Computer Applications

Question Paper Pattern

CORE, ALLIED AND ELECTIVE PAPERS

Duration: 3.00 hrs **Marks: 75**

Section – A **(10 × 1 = 10 marks)**

Multiple Choice Questions - 5 (One from each unit) (Q. No 1 – 5)

Fill in the blanks / True or false - 5 (One from each unit) (Q. No 6 – 10)

Section – B **(5 × 5 = 25 marks)**

Answer all the Questions (Either or pattern)

One Question from each unit (Q. No 11 – 15)

Section – C **(5 × 8 = 40 marks)**

Answer five out of eight Questions

At least One Question from each unit (Q. No 16-23)

SKILL BASED SUBJECTS

Five Questions out of **Eight** **(5 ×15 = 75 marks)**

SELF LEARNING PAPERS AND NON MAJOR ELECTIVE

Five Questions out of **Eight** **(5 ×20 = 100 marks)**

Vellalar College for Women (Autonomous), Erode - 12.									
Bachelor of Computer Applications									
2015 - 2016 onwards									
Course Content and Scheme of Examinations (CBCS Pattern)									
Semester I									
Part	**Study Component**	**Subject Code**	**Title of the Paper**	**Inst. Hrs./ Week**	**Exam. Dur. Hrs.**	**Max. Marks**			**Credits**
						CIA	**ESE**	**Total**	
I	Language I	15TAMU101/ 14HINU101	Tamil / Hindi	6	3	25	75	100	3
II	Language II	13ENHU101	English	6	3	25	75	100	3
III	Core	15CSUC101/ 15CAUC101	C Programming	5	3	25	75	100	4
		15CSUCP01/ 15CAUCP01	C Programming Lab	5	3	40	60	100	3
	Allied I	11CAUA101/ 11ITUA101/ 08CTUA101	Mathematics - I (Computer Oriented Numerical Methods and Statistics)	6	3	25	75	100	5
IV	Foundation Course	09FOCU1ES	Environmental Studies	2	3		100	100	2
Semester II									
I	Language I	15TAMU202/ 14HINU202	Tamil / Hindi	6	3	25	75	100	3
II	Language II	13ENHU202	English	6	3	25	75	100	3
II	Core	15CSUC202/ 15CAUC202	Digital Fundamentals and Architecture	4	3	25	75	100	4
		10CSUC203/ 10CAUC203	Linux and Shell Programming	4	3	25	75	100	4
		10CSUCP02/ 10CAUCP02	Linux and Shell Programming Lab	3	3	40	60	100	1

	Allied II	15CAUA202/ 15CTUA202	Mathematics - II (Optimization Techniques)	5	3	25	75	100	5
IV	Value Education	14VEDU2HR	Value Education and Human Rights	2	3	-	100	100	2

Vellalar College for Women (Autonomous), Erode - 12.

Bachelor of Computer Applications

2015 - 2016 onwards

Course Content and Scheme of Examinations (CBCS Pattern)

Semester III

Part	Study Component	Subject Code	Title of the Paper	Inst. Hrs./ Week	Exam. Dur. Hrs.	Max. Marks			Credits
						CIA	ESE	Total	
III	Core	15CSUC304/ 15CAUC304	Data Structures and Algorithms	5	3	25	75	100	4
		11CSUC305/ 11CAUC305/ 11CTUC305	Object Oriented Programming with Java	5	3	25	75	100	4
		15CSUC409/ 15CAUC306	Operating Systems	5	3	25	75	100	4
		15CSUCP03/ 15CAUCP03/ 15CTUCP03	Java Programming Lab	5	3	40	60	100	3
	Allied III	15CSUA404/ 15CAUA303	Business Accounting	5	3	25	75	100	5
IV	Skill Based Subject I			3	3	40	60	100	3
	Basic Tamil			2	_	100	_	100	2
	Advanced Tamil				3	25	75		
	Non Major Elective II				3	-	100		

Semester IV

III	Core	15CSUC407/ 15CAUC407	Database Management Systems	5	3	25	75	100	4
		15CSUC408/ 15CAUC408	Web Programming	5	3	25	75	100	4
		15CAUC409/ 15ITUC409/ 15CTUC613	Client/Server Computing	5	3	25	75	100	4

		15CSUCP04/ 15CAUCP04	Web Programming Lab	5	3	40	60	100	3
	Allied IV	15CAUA404/ 15ITUE511	Enterprise Resource Planning	5	3	25	75	100	5
IV	Skill Based Subject II	13CSUS402/ 13CAUS402/ 13ITUS402/ 13CTUS402	Multi Skill Development Paper	3	1*	40	60	100	3
	Basic Tamil			2	_	100	_	100	2
	Advanced Tamil				3	25	75		
	Non Major Elective II				3	_	100		

*** ESE is an Online Examination**

Vellalar College for Women (Autonomous), Erode - 12.

Bachelor of Computer Applications

2015 - 2016 onwards

Course Content and Scheme of Examinations (CBCS Pattern)

Semester V

Part	Study Component	Subject Code	Title of the paper	Inst. Hrs./ Week	Exam. Dur. Hrs.	Max. Marks			Credits
						CIA	ESE	Total	
III	Core	15CSUC510/ 15CAUC510	Computer Networks	6	3	25	75	100	4
		11CSUC511/ 08CAUC511/ 15ITUC306/ 08CTUC511	Software Engineering	5	3	25	75	100	4
		15CSUC512/ 15CAUC512	Open Source Computing	5	3	25	75	100	4
		15CSUCP05/ 15CAUCP05	Open Source Computing Lab	5	3	40	60	100	3
	Elective I	15CAUE511	Computer Graphics and Multimedia	6	3	25	75	100	5
		15CSUE531/ 15CAUE521/ 15ITUE531/ 15CTUE521	Big Data Analysis						
		15CAUE531	E – Commerce						

IV	Skill Based Subject III			3	3	40	60	100	3
Semester VI									
III	Core	11CSUE612/ 11CAUC613/ 11CTUE632	Wireless Application Protocol	5	3	25	75	100	4
		15CSUC614/ 15CAUC614	GUI Tools	5	3	25	75	100	4
		15CSUCP06/ 15CAUCP06	GUI Lab	5	3	40	60	100	3
		09CAUC6PV	Project *	6		-	100	100	5
	Elective II	08CAUE612 15CSUC613/ 15CAUE622/ 15ITUC512 15CSUE622/ 15CAUE632/ 15ITUE612/ 15CTUE622	Software Project Management/ Software Testing/ Internet of Things	6	3	25	75	100	5
IV	Skill Based Subject IV			3	3	40	60	100	3
V	Extension Activity		NSS/NCC/ Physical education/ YRC/GreenSociety/EDP/CCC	-	-	-	-	100	1
Total (I - VI semesters)								4000	140

*** Project - 80% Viva - 20%**

NON MAJOR ELECTIVES		
S.No	**Subject Code**	**Title of the Paper**
1	14TMLU301 14TMLU402	Basic Tamil *
2	14ADTU301 14ADTU402	Advanced Tamil **
3	11CSUNP01/ 11CAUNP01/ 11ITUNP01/ 11CTUNP01	Data Processing through Excel - Lab
	11CSUNP02/ 11CAUNP02/ 11ITUNP02/ 11CTUNP02	Web Designing (Dreamweaver) - Lab
* For students whose Part I in Secondary Education is not Tamil ** For students whose Part II in Higher Secondary Education is not Tamil		

SELF LEARNING PAPERS (Optional)					
S.No.	**Subject Code**	**Title of the paper**	**Exam. Dur. Hrs.**	**Max. Marks**	**Credits**
1	13CSUSL01	Computer Ethics	3	100	5
2	15CSUSL02	How the Internet Works	3	100	5
3	13CSUSL03	Green Computing	3	100	5
4	13CSUSL04	Security in Computing	3	100	5
5	13AUGSL05	General Awareness	3	100	5

SEMESTER I

Core Paper I

C PROGRAMMING

Instructional Hrs. : 75 **Sub. Code :15CSUC101/ 15CAUC101**

Max. Marks : CIA -25; ESE -75 **Credits: 4**

Objective : To make the students understand the basic concepts of C programming language and to understand the logic of the program

UNIT I

Introduction to Computer Problem Solving: Introduction – The Problem Solving Aspect – Top-Down Design. **Fundamental Algorithms:** Introduction – Exchanging the Values of Two Variables – Summation of a Set of Numbers – Factorial Computation – Generation of the Fibonacci Sequence – Reversing the Digits of an Integer.

UNIT II **15 Hrs.**

Overview of C – Constants, Variables, and Data Types – Operators and Expressions – Managing Input & Output Operations: Introduction – Reading a Character – Writing a Character – *Formatted Input – Formatted Output.*

UNIT III **15 Hrs.**

Decision Making and Branching: Introduction – Decision Making with if Statement – Simple if Statement – The if……else Statement – Nesting of if…..else Statements – The Else if Ladder – The Switch Statement – The?: Operator – *The Goto Statement.* **Decision Making and Looping:** Introduction – The While Statement – The do Statement – The for Statement – Jumps in Loops.

UNIT IV **15 Hrs.**

Arrays – Character Arrays and Strings – User-defined Functions.

UNIT V **15 Hrs.**

Structures and *Unions* – Pointers.

Note: *Italics* denotes Topics for Self Study

TEXT BOOK:

1. R.G.Dromey, How to Solve it by Computer, Pearson Education, Twelfth Impression
2. **Balagurusamy E.** Programming in Ansi C , Tata McGraw-Hill Publishing Company Limited – New Delhi. Sixth Edition

REFERENCE BOOK:

1. **Ashok N. Kamthane,** Programming and Data Structures, Pearson Education, Pvt Ltd, New Delhi.

SEMESTER I

Practical I

C PROGRAMMING LAB

Instructional Hrs. : 75 **Sub. Code : 15CSUCP01/ 15CAUCP01**

Max. Marks : CIA -40; ESE -60 **Credits: 3**

Objective : To make the students to implement the concepts of C programming.

1) Write a program to find the sum, average, standard deviation for a given set of numbers.
2) Write a program to generate n Fibonacci nos.
3) Write a program to determine the prime numbers up to a given number.
4) Write a program to convert a decimal number into binary.
5) Write a program to multiply two matrices using functions.
6) Calculate the binomial co-efficient nCr using functions.
7) Write a program to check whether a given word is a palindrome or not.
8) Implement BINARY SEARCH to find a particular name in a list of names.
9) Write a program that declares and initializes a double, an int and a char. Next declare and initialize a pointer to each of the three variables. Your program should then print the address, value stored in and the memory size of each of the six variables.
10) Arrange a set of number in ASCENDING ORDER using Pointers.
11) Write a program to print the Student's Mark sheet assuming Register number, name, and marks in 5 subjects in a Structure. Create an array of Structures and print the mark sheet in the university pattern.
12) Write a program to count the number of alphabets, special characters and words from a line of text.

SEMESTER I

Allied I

MATHEMATICS I

(COMPUTER ORIENTED NUMERICAL METHODS AND STATISTICS)

(Derivations not included – Problems only)

Instructional Hrs. : 90 **Sub. Code : 11CAUA101/ 11ITUA101/ 08CTUA101**

Max. Marks : CIA -25; ESE -75 **Credits: 5**

Objective : To teach the students the basic knowledge in Numerical Methods and Statistics.

UNIT I **18 Hrs.**

The Solution of Numerical Algebraic & Transcendental Equations – Bisection method – Newton-Raphson method – The method of false position.

The solution of Simultaneous Linear Algebraic Equation – Gauss Elimination method – Gauss Jordon Elimination method – Gauss Seidal method of iteration – Gauss – Jacobi method.

UNIT II **18 Hrs.**

Numerical Differentiation – Newton's Forward Difference formula – Newton's backward difference formula – numerical Integration – Trapezoidal rule – Simpson's One-third rule – Simpson's three – eighths rule.

UNIT III **18 Hrs.**

Interpolation – Newton forward interpolation formula – Newton backward interpolation formula – LaGrange's formula – Numerical solution of ordinary differential equations – Taylor method – Euler method – Range Kutta method.

UNIT IV **18 Hrs.**

Measures of central tendency – Mean, Median and mode – Relation between mean, median and mode Dispersion – Range – Mean deviation & standard deviation.

UNIT V **18 Hrs.**

Correlation – Karl Pearson's Coefficient of Correlation – Rank correlation regression – Regression – Equations – Difference between correlation & Regression.

Note : *Italics* denotes Self Study Topics

TEXT BOOKS :

1. Kandasamy P., Thilagavathi, K. and Gunavathi S., *Numerical Methods,* S. Chand & Company Ltd. New Delhi Revised Edition 2005 (Unit I, II & III)
2. Pillai R.S.N., Bagavathi V, *Statistics: Theory and Practice,* Sultan Chand and Sons & Company Ltd. New Delhi. Reprint 2005 (Unit IV & V)

REFERENCE BOOKS :

1. Balagurusamy E., *Numerical methods,* Tata McGraw Hill.
2. Gupta S.C., Kapoor V.K., *Fundamental of Mathematical statisitics,* Sultan Chand and Sons.
3. Rajaraman V., *Computer oriented numerical methods,* PHI Publishers.

SEMESTER I

Foundation Course A

ENVIRONMENTAL STUDIES

Instructional Hrs. : 30 **Sub. Code :09FOCU1ES**

Max. Marks : CIA -Nil ; ESE -100 **Credits: 2**

Objective : To give awareness about the environmental hazards and social issues.

UNIT I **6 Hrs.**

The multidisciplinary nature of environmental studies – Definition, Scope and importance, need for public awareness, natural resources and associated problems – forest resources, water resources, mineral resources, food resources, energy resources, land resources , role of an individual in conservation of natural resources, equitable use of resources for sustainable lifestyles.

UNIT II **6 Hrs.**

Concept of an ecosystem, structure and function of an ecosystem – producers, consumers and decomposers. Energy flow in the ecosystem – food chain, food webs and ecological pyramids, ecological succession.

UNIT III **6 Hrs.**

Biodiversity and its conservation – Introduction – definition, genetic, spices and ecosystem diversity. Conservation of biodiversity – In-situ and Ex-situ conservation of biodiversity.

UNIT IV **6 Hrs.**

Definition, causes, effects and control measures of air pollution, water pollution , soil pollution, noise pollution & Thermal pollution. Disaster management – floods, earthquake, cyclone and landslides.

UNIT V **6 Hrs.**

Social Issues - Global warming, ozone layer depletion, acid rain, nuclear accidents and holocaust (case studies). Consumerism and waste products, Environmental Protection Act- air, water, wildlife, forest issues involved in enforcement of environmental legislation and public awareness.

FIELD WORK

Visit to a local area to document environmental assets – river / forest / grass land / hill / mountain.

Visit to a local polluted site - urban / rural / industrial / agricultural.

Study of common plants, insects, birds.S

Study of simple ecosystems – pond, river , hill slope, etc.

REFERENCE BOOK

Environmental studies. Bharathiar University, Coimbatore, Published by . Bharathiar University.

SEMESTER II

Core Paper II

DIGITAL FUNDAMENTALS AND ARCHITECTURE

Instructional Hrs. : 60 **Sub. Code: 15CSUC202/ 15CAUC202**

Max. Marks : CIA -25; ESE -75 **Credits: 4**

Objective : To make the students understand the basic concepts of Digital Fundamentals and Architecture

UNIT – I **12 Hrs.**

Binary Systems : Digital Computers and Digital Systems – Binary Numbers – Number base conversion – Octal and Hexadecimal Numbers – Complements – Binary Codes. Boolean Algebra and Logic gates: Basic Definitions- Axiomatic Definition of Boolean Algebra – Basic Theorems and Properties of Boolean Algebra – *Boolean Functions* – Canonical and Standard Forms – Other Logic Operations – Digital Logic Gates.

UNIT – II **14 Hrs.**

Simplification of Boolean Functions: The Map method – Two and Three variable Maps – Four Variable Map – Product of Sums simplification – Don't Care Condition. Combinational Logic: Introduction – Design procedure – *Adders* – Subtractors – Code Conversion – Decoders – Multiplexers. Flip-Flop: RS Flip-Flop – JK Flip-Flop – D Flip-flop.

UNIT – III **12 Hrs.**

Input – Output Organization: Peripheral Devices - Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – *Example of I/O Interface.*

UNIT – IV **12 Hrs.**

Asynchronous data Transfer. Strobe Control and *Handshaking* – Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt – Priority Encoder – Interrupt Cycle – Software Routines – Initial & Final Operations. Direct Memory Access: DMA Controller, DMA Transfer.

UNIT – V **10 Hrs.**

Memory Organization: *Memory Hierarchy* – Main Memory – Auxiliary Memory - Associative memory.

Cache Memory: Associative, Direct, Set-associative Mapping – Writing Into Cache Initialization.

Note : *Italics* denotes Topics for Self Study

TEXT BOOKS:

1. **MORRIS MANO, M.,.** *Digital Logic and Computer Design*, Prentice Hall of India, 2006 **(I, II Unit).**
2. **MORRIS MANO, M.,** *Computer System Architecture*, Pearson Pub, III Edition **(III, IV & V Unit).**

REFERENCE BOOKS:

1. **Albert Paul Malvino, Donald P Leach,** *Digital principles and Applications*, McGrawHill, 1996**.**
3. **Carter,** *Computer Architecture*, Schaum's outline series, TMH**.**

SEMESTER II

Core Paper III

LINUX AND SHELL PROGRAMMING

Instructional Hrs. : 60 **Sub. Code : 10CSUC203/ 10CAUC203**

Max. Marks : CIA -25; ESE -75 **Credits: 4**

Objective : To acquire the programming techniques in Linux and Shell Programming.

UNIT I **10 Hrs.**

Introduction to LINUX Operating System : Introduction - The LINUX Operating System.

UNIT II **10 Hrs.**

Managing Files and Directories : Introduction – Directory Commands in LINUX – File Commands in LINUX.

UNIT III **12 Hrs.**

Creating files using the vi editor : Text editors – The vi editor**. Managing Documents :** Locating files in LINUX – Standard files – Redirection – Filters – Pipes.

UNIT IV **14 Hrs.**

Securing files in LINUX : File access permissions – viewing File access permissions – Changing File access permissions. **Automating Tasks using Shell Scripts :** Introduction – Variables- Local and Global Shell variables – Command Substitution.

UNIT V **14 Hrs.**

Using Conditional Execution in Shell Scripts : Conditional Execution – The Case…esac Construct. **Managing repetitive tasks using Shell Scripts :** Using Iteration in Shell Scripts – The while construct – The until construct – The for construct – The break and continue commands – Simple Programs using Shell Scripts.

Note : *Italics* denotes Self Study Topics

TEXT BOOK :

Operating System LINUX , NIIT , Prentice-Hall of India Private Limited, New Delhi, 2006, Eastern Economy Edition.

REFERENCE BOOK :

1. Richard Petersen, *Linux: The Complete Reference*, Sixth Editions, Tata McGraw-Hill Publishing Company Limited, New Delhi, Edition 2008.

2. www.spoken-tutorial.org

SEMESTER II

Practical II

LINUX AND SHELL PROGRAMMING LAB

Instructional Hrs. : 45 **Sub. Code : 10CSUCP02/ 10CAUCP02**

Max. Marks : CIA -40; ESE - 60 **Credits: 1**

Objective : To get hands on experience in Linux and Shell programming.

1. Write a shell script to stimulate the file commands : rm, cp, cat, mv, cmp, wc, split, diff.
2. Write a shell script to show the following system configuration :
    a. currently logged user and his log name
    b. current shell , home directory , Operating System type , current Path setting , current working directory
    c. show currently logged number of users, show all available shells
    d. show CPU information like processor type , speed
    e. show memory information
3. Write a Shell Script to implement the following : pipes, Redirection and tee commands.
4. Write a shell script for displaying current date, user name, file listing and directories by getting user choice.
5. Write a shell script to implement the filter commands.
6. Write a shell script to remove the files which has file size as zero bytes.
7. Write a shell script to find the sum of the individual digits of a given number.
8. Write a shell script to find the greatest among the given set of numbers using command line arguments.
9. Write a shell script for palindrome checking.
10. Write a shell script to print the multiplication table of the given argument using for loop.

SEMESTER II

Allied Paper II :Mathematics II

(Optimization Techniques)

(Derivations Not Included – Problems Only)

Instructional Hrs: 75 **Sub. Code: 15CAUA202 / 15CTUA202**

Max. Marks: CIA – 25; ESE – 75 **Credits: 5**

Objective: To make the students to know the optimization techniques.

UNIT I **14 Hrs.**

Linear Programming: Introduction – Mathematical Formulation of the Problem – Graphical Solution – General Form of LPP – Canonical & Standard form of LPP – Simplex Method – Big-M Method .

UNIT II **15 Hrs.**

The Transportation Problem: Mathematical Formulation of the Problem – Initial Basic Feasible Solution (North-West Corner Rule, Minimum Cost Method, Vogel's Approximation Method) – Moving towards Optimality – Unbalanced Transportation Problems.

Assignment Problem: Mathematical Formulation of an Assignment Problem – Hungarian Assignment Method – Unbalanced Assignment Problems.

UNIT III **16 Hrs.**

Inventory Control: Introduction – Various Costs involved in Inventory – EOQ models with out Shortage - EOQ models with Shortage - Buffer Stock & Reorder Level.

UNIT IV **15 Hrs.**

Replacement Problems: Introduction – Replacement of Equipments that deteriorates gradually - Replacement of Equipment that fails suddenly. PERT – CPM: Introduction - Rules of Network Construction – Critical Path Method – PERT Calculations.

UNIT V **15 Hrs.**

Queueing Theory: Introduction – Characteristics of Queueing System – Traffic Intensity – Poisson Process & Exponential Distribution – Classification of Queues – Problems from Single Server Infinite and Finite Population Model.

Note: Italics denotes Self Study Topics

TEXT BOOK

1. Kanti Swarup, Gupta P K & Man Mohan, Operations Research, S.Chand & Company Pvt. Ltd, New Delhi.

REFERENCE BOOK

1. Gupta P K , Hira D S, Introduction to Operations Research, S.Chand & Company Pvt. Ltd, New Delhi.

SEMESTER II

Value Education

ETHICS AND HUMAN VALUES

Instructional Hrs. : 30 **Sub. Code : 10VEDU2EH**

Max. Marks : CIA - Nil ; ESE -100 **Credits: 2**

Objective : On successful completion of the course , the students should have understood and develop the leadership qualities, art of living and personality development with the knowledge on cultural heritage of India.

Unit I **6 Hrs.**

Vedas and human values – ethical values from *Ramayana and* **.**Mahabharata-righteousness as expressed in Thirukural.

Unit II **6 Hrs.**

Essence of religions : Hinduism-Jainism-*Buddhism*-Christianity-Islam **Unit III**

6 Hrs.

Saints and philosophers : Adi Sankara-*Ramanuja*-Kabir- Vallalar-Vivekanandha

Unit IV **6 Hrs.**

Art of living – interpersonal skills – professional ethics – *leadership qualities*.

Unit V **6 Hrs.**

Case study: Family hormony – *Social behavior* – Public relations – Challenges and response.

Note : *Italics* denotes Topics for Self Study

REFERENCE BOOKS

1. **Bali D.R**, *Modern Indian Though: From Ramona Roy to Jayaprakash Narayan*,Sterling Publishers, New Delhi, 3rd Edition, 1988.
2. **Basham A.L**, *The wonder that was India*, Sielgwen and Jackson, 1st Edition, 1967.
3. **Richard H. Viola**, *Organizations in a changing society: Administration and Human Values*, W.B.Saunders Company, Philadelphia, 1st Edution,1977.
4. **Sen S.P**, Social *and Reform Movements in India*, Institute of Historial Studies, 1st Edition, 1979.
5. **Vivekananda**,*Letters of Swami Vivekananda*, Advaita Ashrama, Kolkatta, 4th Edition, 1976.

SEMESTER - III

Core Paper - Data Structures and Algorithms

Instructional Hrs. : 75 **Sub. Code : 15CSUC304 / 15CAUC304**

Max. Marks : CIA -25; ESE -75 **Credits: 3**

Objective : To make the students to understand the basic concepts of Data Structures and Algorithms.

UNIT I **15 Hrs.**

Introduction – Overview – How to Create Programs - How to Analyze Programs Arrays – Axiomatization – Ordered Lists – Sparse Matrices - Representation of Arrays.

UNIT II **15 Hrs.**

Stacks and Queues – Fundamentals – Mazing Problem - Evaluation of Expressions - Multiple Stacks and Queues.

UNIT III **15 Hrs.**

Linked lists: Singly Linked Lists – Linked Stacks and Queues – The Storage Pool – Polynomial Addition - Sparse Matrices - Doubly Linked Lists and Dynamic Storage Management.

UNIT IV **15 Hrs.**

Trees: Basic Terminology – Binary Trees – Binary Tree Representation – Binary Tree Traversal – Binary Tree Representation of Trees – Applications of Trees: Decision Trees. Symbol Tables – Hash Tables: Hashing Functions - Overflow Handling.

UNIT V **15 Hrs.**

Internal Sorting: Searching – Insertion Sort – Quick Sort – Two way Merge Sort – Heap Sort. Files: File Organizations: Sequential, Random, Linked Organizations, Inverted Files, Cellular Partitions.

Note : Italics denotes Topics for Self Study

TEXT BOOKS:

1. Ellis Horowitz and Sartaj Sahni, Fundamentals of Data Structure, Galgothia book source, 2003

REFERENCE BOOKS:

1. Samanta, D. Classic Data structure, Prentice Hall of India Pvt Ltd, Ninth edition, 2007.
2. Jean-Paul Tremblay & Paul G.Sorenson, An Introduction to Data Structures with Applications, Tata McGraw Hill Company, 2nd Edition, 1998.

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SEMESTER III

CORE PAPER V: OBJECT ORIENTED PROGRAMMING WITH JAVA

Instructional Hrs. : 75 **Sub. Code : 11CSUC305 / 11CAUC305 / 11CTUC305**

Max. Marks : CIA -25; ESE -75 **Credits: 4**

Objective : To make the students understand the basic concepts of Object Oriented Programming With Java.

UNIT I **15 Hrs.**

Fundamentals of Object-Oriented programming: Introduction-Object –Oriented Paradigm-Basic concepts of Object-Oriented Programming-Benefits of OOP-Applications of OOP. **JAVA Evolution:** History – Features – *How Java Differs from C and C++* - Java and Internet – Java and WWW – Web Browsers. **Overview of Java Language:** Introduction – Simple Java Program – Structure – Java Tokens – Statements – Implementing Java Program – Java Virtual Machine.

UNIT II **15 Hrs.**

Constants – Variables – Data Types - Operators and Expressions. *Decision Making and Branching:* If – If else, Else if ladder, Switch, ?: Operator. Decision Making and Looping: While, do, for – Jumps in Loops – Labeled Loops. Classes, Objects and Methods.

UNIT III **15 Hrs.**

Arrays, Strings and Vectors – **Interfaces:** *Multiple Inheritance* – Packages: Putting Classes together – Multi Threaded Programming.

UNIT IV **15 Hrs.**

Managing Errors and Exceptions – Applet Programming – *Graphics Programming.*

UNIT V **15 Hrs.**

Files: Introduction – Concept of Streams – Stream Classes – Using Streams - I/O Classes – File Class – I/O Exceptions – Creation of Files – Reading/ Writing Characters/ Bytes – Handling Primitive Data Types – *Random Access Files*.

Note : *Italics* denotes Topics for Self Study

TEXT BOOKS:

1. **E.Balagurusamy E.**, *Programming with Java* -A primer- TMH pub, 2'nd Edition, 2005.

REFERENCE BOOKS:

1. ***John R.Hubbard*** , *Programming with Java-*, TMH Pub, 1999**.**
2. ***Patrick Naughton and Herbert Schidt,*** *The Complete Reference Java 2* -, 3 rd Edition, TMH Pub, 2000.
3. ***Xavier C.,*** *Programming with Java 2* -, SciTech pub, 2000.

SEMESTER III

Core Paper VI

OPERATING SYSTEM

Instructional Hrs. : 75 **Sub. Code : 15CSUC409/ 15CAUC306**

Max. Marks : CIA -25; ESE -75 **Credits: 4**

Objective : To make the students understand the concepts of System Software.

UNIT I **14 Hrs.**

Introduction: What is an Operating System?. **Process Concepts:** Definition of Process – Process States – Process States Transitions – The Process Control Block – *Operations of Processes* – Suspend and Resume - Interrupt Processing- **Asynchronous Concurrent Processes** : Mutual Exclusion – Critical Sections – Semaphores. **Deadlock and Indefinite Postponement.**

UNIT II **14 Hrs.**

STORAGE MANAGEMENT

Real Storage: Real Storage Management Strategies – Contiguous Versus Non-Contiguous Storage Allocation – Single User Contiguous Storage Allocation – Fixed Partition Multiprogramming – Variable Partition Multiprogramming

Virtual Storage: Virtual Storage Management Strategies – Page Replacement Strategies – Demand Paging – *Page Size***.**

UNIT III **15Hrs.**

PROCESSOR MANAGEMENT

Job and Processor Scheduling: Introduction – Scheduling Levels, Objectives, Criteria - Preemptive Vs Non-Preemptive Scheduling – *Priorities* – Deadline Scheduling – FIFO – RR – SJF – SRT – HRN

UNIT IV **16 Hrs.**

AUXILIARY STORAGE MANAGEMENT

Disk Performance Optimization: Introduction - Operation of Moving-Head Disk Storage – Need for Disk Scheduling – Characteristics of Disk Scheduling Policies - Seek Optimization – *RAM Disks - Optical Disks.*

UNIT V **16 Hrs.**

File and Database Systems: Introduction – The File System – File System Functions – File Organization – Allocating and Freeing Space – File Descriptor – Access Control Matrix.- Access Control by User Classes.

Case Study: LINUX : *Introduction – Unix and Linux Comparison – Process Management – File Management – Device Drivers – Security.*

Note : Italics denotes Self Study Topics

TEXT BOOKS:

1. Deitel H.M, Operating Systems, 2nd Edition, Pearson Education Publication, 2003.

REFERENCE BOOKS:

1. Achyut S Godbole, Operating System, TMH Publications, 2002.

SEMESTER - III

Practical – III

JAVA PROGRAMMING LAB

List of Practical

Instructional Hrs. : 75 **Sub. Code : 15CSUCP03 / 15CAUCP03 / 15CTUCP03**

Max. Marks : CIA -40; ESE -60 **Credits: 3**

Objective : To make the students to implement the concepts of Object Oriented Programming using Java.

1. Write a Java program to Print Pascal's triangle.
2. Write a program to display multiplication table using default and argument constructors.
3. Write a program to find the area of the square, rectangle and triangle using the method of overloading.
4. Create a class Employee which includes employee number, Name, Year of experience. To accept N number of employee details, and sort it by employee name wise.
5. Write a program to extract a portion of a character string and print the extracted string.
6. Define an interface having one method that takes an integer parameter. For this method, provide two implementations: In the first one, just print the value and in the second one, print the square of the number. Try to call both the versions.
7. Create a package to calculate arithmetic operations of two numbers and another package to calculate logical operations of two numbers. Write a Java program to use these packages.
8. Write a program using threads to increment a shared variable.
9. Create a program to handle three types of exceptions.
10. Design an applet program to draw several shapes.
11. Create an Applet Program to draw human eyes at mouse click position
12. Write a java program to manage purchase details using Random Access file.

SEMESTER III

Allied Paper III Business Accounting

(40% Theory, 60% Problems Only)

Instructional Hrs. 75 **Sub Code: 15CSUA404/ 15CAUA303**

Max. Marks: CIA -25; ESE -75 **Credits: 5**

Objective: To make the students understand the basic concepts of Business Accounting

UNIT I **15 Hrs.**

Accounting: Definition – Objectives – Branches of Accounting – Accounting Concepts – Conventions – *Systems of Accounting* – Rules for Double-Entry System of Book Keeping – Preparation of Journal and Ledger Accounting.

UNIT II **15 Hrs.**

Subsidiary Books: Purchase Book – *Sales Book* – Purchase Return Book – Sales Return Book – Cash Book (Two Columnar only) - Petty Cash Book.

UNIT III **15 Hrs.**

Preparation of Trial Balance – Final Accounts: *Trading, Profit and Loss Account* and Balance Sheet with Simple Adjustments.

UNIT IV **15 Hrs.**

Depreciation: Definition - Causes of depreciation – Basic factors - Methods of Depreciation – Straight Line Method and Diminishing Balance Method (Simple Problems). Pricing of Material Issued: FIFO – LIFO – Simple and Weighted Average Method.

UNIT V **15 Hrs.**

Cost Accounting: *Elements of Costing* – Types of Costing – Preparation of Simple Cost Sheets. Individual Bonus Plans – Halsay System and Rowan System.

Note : *Italics* denotes Topics for Self Study

TEXT BOOKS:

1. .**Murthy T.S.,. Margham A.,** *Advanced Accountancy,* Reddy Pub., 1st Edition
2. **Jain S.P &.Narang, K.L,** *Cost Accounting Principles and Practice,* Kalyani Publisher.

REFERENCE BOOKS:

1**. Grewal**, **T.S.,** *Double Entry Book Keeping,* Sultan Chand & Sons Publisher
2..**Vinayakam M.N., Mani P.L., Nagarajan K.L** *Principles of Accountancy,* 3rd Edition.

Skill Based Subject I
SEMESTER III

DATABASE MANAGEMENT THROUGH ACCESS LAB

Instructional Hrs. : 45 **Sub. Code: 11CAUSP01**

Max. Marks: CIA -40; ESE -60 **Credits: 3**

Objective: To make the students learn database management system.

1. Create an employee table with the following fields.
   a. Number, Name, Dept, Designation , Address1, Address2,City.
   b. Set the Number as primary key
2. Modify the employee table structure
   a. Delete the Address Field.
   b. Add Experience salary field
   c. Insert the primary key.
3. Update the designation and salary for those who have completed 10 years of service in the employee table.
4. Sort the employee table by name and date of joining
5. Filters the table content using
   i. Filter by form
   ii. Filter by selection
6. Display the employee details to department wise and or date of joining wise.
7. Create a query to display date of joining, designation of those who have completed 15 years service.
8. Design a form to display employee number, name, department, service and salary.
9. Create a report to display employee number, name, salary and designation.
10. Import data from Excel sheet.

Non Major Elective I

SEMESTER III

DATA PROCESSING THROUGH EXCEL LAB

Instructional Hrs. : 30 **Sub. Code:y11CAUNP01**

Max. Marks: CIA -Nil; ESE -100 **Credits: 2**

Objective: To teach data processing through Excel

1. Create a worksheet and perform the following formats for a list containing text, data and number.
   (I) Aligning entries –Indent, Rotate etc.
   (II) Formatting Borders, Date and Numbers.
   (III) Conditional Formatting.
   (IV) Creating a custom style.

2. Create a sheet containing Nation-wide sales results for Avon Helmets-Region Vendor name- Helmet type, Helmet Color and total sales.
   (I) Sort the data by Region, Vendor name and sales.
   (II) According to a custom list of Helmet Color-Red, Blue, Yellow and Green.

3. Create a sheet containing Nation-wide sales results for Avon Helmets-Region Vendor name- Helmet type, Helmet Color and total sales.
   (I) Use Filtering on Region and Helmet type.
   (II) Use sub total function to count the no. of records and sum of sales for the filtered records.

4. Use query wizard to filter East, West Region transaction and sort them on Region and total sales.

5. Perform the following.
   (i) Create a list of vendor and total sales by consolidating the total sales. Compute sub totals with no detail data.
   (ii) Create Subtotals by both Region and vendor within Region.

6. Create a PIVOT TABLE to show the sales results by Region and Helmet type and summarize the total sales.

7. Create a PIVOT chart for the pivot table of total sales for the Region and Helmet types.

8. Create a pie chart to show the sales results for different Helmet type and to the following formats.
   (i) Add a Secondary axis.
   (ii) Create picture markers.

SEMESTER IV

Core Paper VII

DATA BASE MANAGEMENT SYSTEMS

Instructional Hrs. : 75 **Sub. Code: 15CSUC407/ 15CAUC407**

Max. Marks : CIA -25; ESE -75 **Credits: 3**

Objective : To make the students understand the need for database system, it's features and advantages.

UNIT I **15 Hrs.**

Introduction : Database - System Applications - Purpose of database Systems - View of Data - Data Models - Database Languages - Relational Databases -Database Design - Data Storage and Querying - *Transaction Management* - Database Architecture - Database users and Administrators.

Relational Databases: Structure of Relational Databases - Database Schema - Keys- Relational Algebra.

UNIT II **15 Hrs.**

Introduction to SQL: Overview of the SQL Query Language - *Basic structure of SQL Queries* - set operations - Null Values - Aggregate functions - Nested subqueries - Modification of the Database. **Intermediate SQL:** Join Expressions – Views.

UNIT III **13 Hrs.**

Intermediate SQL: Integrity Constraints. **Advanced SQL:** Embedded SQL-Triggers. **Database Design and the E-R Model:** Entity-Relationship Model - Constraints - Entity-Relationship Diagram - *Extended E-R Features.*

UNIT IV **16 Hrs.**

Relational Database Design: *Features of Good Relational Designs* - Atomic Domains and First Normal Form - Decomposition using Functional Dependencies - Functional Dependency Theory - Decomposition using Multivalued Dependency - More Normal Forms.

UNIT V **16 Hrs.**

Object Based Databases: Overview - Complex Data types - *Structured Types and Inheritance in SQL* - Object-Identity and Reference Types in SQL.

Data Warehousing and Mining: Decision–support systems - Data warehousing - Data Mining. **Spatial and Temporal Data and Mobility:** Spatial and Geographic Data - Multimedia Databases - Mobility and Personal Databases.

Note : *Italics* denotes Self Study Topics

TEXT BOOK:

Abraham Silberschatz, Hentry F.Korth, Sudharshan S., *Database System Concepts* Mc-Graw Hill International Editions (2011), Sixth Edition.

REFERENCE BOOKS:

1. Alexis Leon And Mathews Leon, *Database Management Systems*, Vikas Publishers.
2. *Fundamentals of Database Systems*- Elmasri Navathe, Pearson Education Pub, 3rd Edition, 2001.

SEMESTER IV

Core Paper VIII

WEB PROGRAMMING

Instructional Hrs. : 75 **Sub. Code: 15CSUC408/ 15CAUC408**

Max. Marks: CIA -25; ESE -75 **Credits: 4**

Objective: To make the students understand the web programming concepts.

UNIT I **15 Hrs.**

Introduction : History of the Internet and World Wide Web – Key Software Trend- Object Technology – JavaScript : Object-Based Scripting for the Web.

Introduction to HTML : Introduction - Editing HTML – Headings – Linking – *Images* – Special Characters, Horizontal Rules – Lists – Tables –Forms - – Internal Linking - Meta Element and Frameset Element.

UNIT II **13 Hrs.**

Cascading Style Sheets (CSS): Introduction – Inline Styles - Embedded Style Sheets - Conflicting Styles – Linking External Style Sheets – Positioning Elements – *Backgrounds* – Element Dimensions – Text Flow and Box Model – User Style Sheets – CSS3.

UNIT III **16 Hrs.**

Introduction to Scripting: JavaScript – Introduction to Scripting – Simple Programs - Memory Concepts – Arithmetic – Decision Making : Equality and Relational Operators –Control Structures – if Selection statement- if..else Selection Statement – while Repetition Statement – Assignment operators- Increment and Decrement Operators - Essentials of counter-controlled repetition – **for** repetition Statement **–** switch Multiple Selection Statement **– do..while** Repetition Statement – The **break** and **continue** Statements – Labeled break and Continue Statements - *Logical operators*.

UNIT IV **16 Hrs.**

Functions: Program Modules in Java Script - Programmer-Defined Functions - Function Definitions – Scope Rules – JavaScript Global Functions - *Recursion* – Recursion vs. Iteration.

Arrays: Arrays - Declaring and allocating Arrays – Examples using Arrays - References and Reference Parameters – Passing Arrays to Functions - Sorting arrays – Searching Arrays : Linear and Binary Search – Multidimensional Arrays.

UNIT V **15 Hrs.**

Objects: Introduction to Object Technology -Math Object - String Object - Date Object - Boolean & Number Objects - *Document Object* - Window Object - using Cookies.

Events : Introduction – Registering event Handlers – Event onload – Event onmousemove, the event Object and this – Rollovers with onmouseover and onmouseout – Form Processing with onfocus and onblur – More Form Processing with onsubmit and onreset – Event Bubbling – More Events.

Note: *Italics* denotes Self Study Topics

TEXT BOOKS:

1. P.J.Deitel & H.M.Deitel, *Internet and World Wide Web – How to Program*, Prentice Hall of India, 2009, Fourth Edition.

REFERENCE BOOKS:

1. Deitel, Deitel & Neito, *XML – How to Program*, Pearson Education, Asia.
2. Shelley Powers, et al., *Dynamic Web Publishing Unleashed* , Second Edition, Techmedia, New Delhi.
3. Thomas A.Powell, *HTML: The Complete Reference*, Tata McGraw Hill Second Edition.
4. Xavier C., *World Wide Web design with HTML*, Tata McGraw-Hill Publishing Company , New Delhi.

SEMESTER IV

Core Paper IX

CLIENT / SERVER COMPUTING

Instructional Hrs. : 75 **Sub. Code : 15CAUC409**

Max. Marks : CIA -25; ESE -75 **Credits: 4**

Objective : To make the students to gain ample knowledge in Client/Server Computing.

UNIT I **15 Hrs.**

Client / Server computing - What is client / server? – File servers, database servers, Transaction servers, Groupware servers, Object servers, Web server – FAT server or client / server -Client / Server building blocks

UNIT II **15 Hrs.**

Client / Server and operating systems – the Anatomy of a server program – Needs of Client / Server from an OS – server scalability – Client anatomy – Client and server OS trends – Client OS and server OS. NOS: Creating the single system image - Remote procedure Calls (RPC) – Messaging and Queuing: The MOM Middleware

UNIT III **15 Hrs.**

SQL Database servers: What does SQL do? – The ISO standards – What does a database server do? – Stored procedures, Triggers and Rules. **Data warehouses –** OLTP (Online Transaction Processing) – Decision Support System (DSS) – Executive Information System (EIS) – comparing Decision Support and OLTP system – Production vs. Information Database – The data ware house

UNIT IV **15 Hrs.**

Client / Server Transaction Processing – The ACID properties – Transaction Models – TP monitors – Client / Server groupware – Importance of Groupware – What is Groupware – The components of Groupware. Distributed Object, CORBA style – CORBA: ORB - The Anatomy of a CORBA ORB.

UNIT V **15 Hrs.**

Web client / server – The Evolution of the Web- Client/Server , Web Style -What is URL? – Shortest HTML tutorial – HTTP – 3tier client / server – HTML web based forms – CGI: The server side of the web.

Note : Italics denotes Topics for Self Study

TEXT BOOK

1. Robert Orfali, Dan Harkey and Jeri Edwards, Client /Server Survival Guide, Wiley India Publication Private Limited, Third Edition, 2008.

REFERENCE BOOKS

1..Nein Jenkins, Client / Server Unleashed, 1st Indian Edition, 1998,Tech Media .

2.Partick N.Smith, Steven L.Guengerich, Client /Server Computing , 2nd Edition, 2002,PHI.

SEMESTER IV

Practical IV

WEB PROGRAMMING LAB

Instructional Hrs. : 75 **Sub. Code: 15CSUCP04/**
15CAUCP04/

Max. Marks: CIA -40; ESE -60 **Credits: 3**

Objective To make the students implement the web programming concepts.

1. Create a web page with
    1. Correct Structure (header and body)
    2. A title
    3. At least two different headings, with separate content following each heading
    4. An unnumbered list with at least 3 items
    5. A numbered list with at least 3 items
    6. At least 4 links to other web pages
    7. At least 1 picture
2. Create a XHTML Document using nested list with indentation
3. Create a XHTML Document using frames and images.
4. Use HTML and CSS to create a 3 column layout with a top banner section, 3 columns, and a bottom footer section. First column contains Buttons, second column shows the main content and third column contains advertisements.
5. Write CSS to make the following style changes:
    a) All elements in the body should have a white background with a text color of #330033 and the font Verdana or any serif available.
    b) The first-level headers are 40px bold serif font. The second-level headers are 24px underlined sans serif.
    c) Paragraph text and lists should have a width of 550px and a top and bottom padding of 10px.
    d) Ordered lists should have a background color of #FFCC99 and unordered lists should have a background color of #CCFFCC. All list elements should be in italics.

e) Links should never show the default underlining and upon hovering they should become neon green(#33ff33)

6. Write a recursive function GCD that returns the greatest common division of x and y. The GCD of x and y is defined recursively as follows: if y is equal to 0 then GCD(x,y) is x; otherwise GCD(x,y) is GCD(y,x%y) where % is the modulus operator. Write a XHTML document to implement this function.
7. Write a function PERFECT that determines whether the given parameter is a perfect number. Use this function in a script that determines and displays all the perfect numbers between 1 and 1000.
8. Write a program to read numeric data and sort them using bubble sort.
9. Write a program to search for a number using binary search.
10. Create a XHTML document using functions to calculate the volume of a sphere, cylinder and a cube. Use radio buttons for selecting a particular shape.
11. Write a program to read a string and use indexOf, lastIndexOf and split methods of String object.
12. Write a simple drawing program using onmousemove that allows the user to draw inside a box in red or blue by holding down the Shift or Ctrl keys.

SEMESTER IV

Allied Paper

ENTERPRISE RESOURCE PLANNING

Instructional Hrs: 75 **SubCode:15CAUE404**

Max.Marks: CIA-25; ESE-75 **Credits: 5**

Objective: To enrich the student in the concept of Enterprise Resource Planning

UNIT I **15 Hrs.**

Introduction to ERP: Introduction-Evolution of ERP-What is ERP?-Reasons for the growth of the ERP market-The advantages of ERP-why do many ERP implementations fails?-*Why are ERP packages being used now?.*

UNIT II **14 Hrs.**

ERP-A manufacturing perspective : Introduction-ERP-CAD/CAM-Materials Requirement Planning(MRP)-*Bill Of Material*-Closed loop MRP-Manufacturing Resource Planning(MRP-II)-Distribution Requirements Planning(DRP)-JIT and Kanban-Computer Aided Design/ComputerAided Manufacturing(CAD/CAM)-ProductDataManagement(PDM)-Data Management-Benefits of PDM-Make-To-Order(MTO) and Make-To-Stock(MTS)-Assemble-To-Order(ATO)-Engineer-To-Order(ETO)-Configure-to-Order(CTO).

UNIT III **15 Hrs.**

ERP Modules: Introduction–Finance-Plant Maintenance-Quality Management-Materials Management.

UNIT IV **15 Hrs.**

Benefits of ERP: Introduction-Reduction of Lead-Time-On-Time Shipment-Reduction in cycle Time-Improved Resource Utilisation-*Better Customer satisfaction*-Improved Supplier Performance-Increased Flexibility-Reduced Quality costs-Improved Information Accuracy and Decision Making Capability.

UNIT V **16 Hrs.**

ERP implementation Lifecycle: Introduction-Pre-Evaluation Screening-Package Evaluation-Project Planning Phase-Gap analysis-Reengineering-Configuration-Implementation Team Training-Testing-Going Live-*End-User Training*-Post Implementation(Maintenance mode).

Note: Italics denotes Self Study Topics

TEXT BOOK:

1. **Alaxis leon**, *" Enterprise Resource Planning*",Tata Mcgraw Hill , Newdelhi.

REFERENCE BOOKS:

1. **Mary Summer**," *Enterprise Resource Planning*", Pearson Education.
2. **RaviShankar, S.Jaiswal**, "*Enterprise Resource Planning*", Galgolia Publication Pvt. Ltd., New Delhi.

SEMESTER IV

Skill Based Subject II

MULTI SKILL DEVELOPMENT PAPER

Instructional Hrs.: 45 **Sub. Code: 13CSUS402/ 13CAUS402/ 13ITUS402/ 13CTUS402**

Max.Marks :100 (ESE – 60 CIA – 40) **Credits: 3**

Aim: To equip the students with knowledge on all topics as desirable from the point of view of brilliant success in the competitive examinations.

Objective: To familiarize the students with various types of tests that are employed by the diverse examining bodies.

UNIT I **9 Hrs.**

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

UNIT II **9 Hrs.**

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

UNIT III **9 Hrs.**

Critical Reasoning: Logical Inference Questions and Syllogism.

Analytical Reasoning: Arrangement problems – Family / Blood Relation Qualms – Sense of Directions – Age Doubts.

Verbal Reasoning: Verbal Analogy (Letter series and number series only) – Coding and Decoding.

UNIT IV **9 Hrs.**

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

UNIT V **9 Hrs.**

Group Discussion – Importance – Types of GD – GD Skills – GD Etiquette(do's and don'ts) – Essential Elements of a GD – Movements and Gestures to be avoided in a GD - **Online Services** – Reservation –Banking –Purchases –Passport application.

REFERENCE BOOKS:

1. **Hari Mohan Prasad & Uma Rani Sinha. 2011.** Objective English for Competitive Exminations. New Delhi: Tata McGraw Hill Education Private Ltd. (Unit – I)
2. **R.S. Aggarwal,** Quantitative Aptitude, S.Chand 2010. (Unit - II)
3. **Edgar Thorpe,** Test of Reasoning for Competitive Examinations –4th edition, Tata McGraw-Hill Publishing Company Limited, New Delhi. (Unit – III)
4. **R.S. Agarwal,** A Modern Approach to Verbal Reasoning (Fully Solved) –Revised Edition, S.Chand Company Limited, New Delhi, 2012. (Unit – III)
5. **M. S. Rao,** Soft Skills Enhanching Employability-Connecting Campus with Corporate, IK International Publishing House, NewDelhi, 2010. (Unit – IV)
6. **Alex.K**, Soft Skills-Know Yourself and Know the World, S.Chand Company Ltd., 2011.(Unit V)
7. Group Discussions- Pass with Flying Colours, G. K. Publications, NOIDA, 2012.
8. **Jain T.S.Upkar's** SBI Clerical Cadre Recruitment Examination. Agar Upkar P*rakashan*

Non Major Elective II

SEMESTER IV

WEB DESIGNING (DREAM WEAVER) LAB

Instructional Hrs. : 30 **Sub. Code: 11CAUNP02**

Max. Marks: CIA -40; ESE -60 **Credits: 2**

Objective: To impart practical knowledge of Dreamweaver.

1. Design a new web site for a product of your choice. Add some file and folders and name one of the files as index.htm.

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2. Create an order list, un-order list, definition list and some nested list. Try to change the text alignment, text style, text color of the above page.

3. Create a favorite link page, including links to all your favorite web site. You can either use the URL of the link as the text that displays or you can create a hyper link out of a descriptive word or phrase.

4. Insert an image into an web page and experiment with Dreamweaver's image editing tools. Try using sharpen, crapping & brightness/contrast. Then resize the image and try image re - sampling.

5. Insert a sound or movie file into a web page. Create a hyperlink to the same file. Explore how the sound or movie works differently from the linked sound or movie.

6. Create a table with text in column 1 and numbers in column 2. Try both ascending and descending sorts on both the alphabetic data in column 1 and the numeric data in column 2.

7. Insert a table and experiment with merging and splitting cells. Insert a nested table into one of the cells in standard mode or draw a nested table in layout mode.

8. Create a form to collect the user data of your choice. Format the form objects and labels with a table, so that they line up nicely. Place submit and reset buttons in the bottom row of the table and merge the cells.

REFERENCE BOOK :

1. Betsy Bruce, Sams Teach Yourself Adobe Dreamweaver CS3, Pearson Education 2007.

SEMESTER V

Core Paper X

COMPUTER NETWORKS

Instructional Hrs. : 90 **Sub. Code : 15CSUC510 / 15CAUC510**

Max. Marks : CIA -25; ESE -75 **Credits: 4**

Objective : To make the students understand the basic concepts of Computer Networks.

UNIT I **15 Hrs.**

Introduction: *Uses of Computer Networks* – Network hardware – Network Software – Reference Models – The OSI Reference Model – The TCP/IP Reference Model.

UNIT II **20 Hrs.**

The Physical Layer: Guided Transmission Media – **The Public Switched Telephone Network:** Switching .

Data Link Layer: Data Link Layer Design Issues – Error Detection and Correction.

UNIT III **20 Hrs.**

Data Link Layer: Elementary Data Link Protocols.

The Medium Access Control: Multiple Access Protocol – The Channel Allocation Problem - Multiple Access Protocols: Carrier Sense Multiple Access Protocols – Collision-Free Protocols – Limited Contention Protocols – **Bluetooth:** Bluetooth Architecture – Bluetooth Applications – **Data link Layer Switching:** Repeaters, Hubs, Bridges, Switches, Routers and Gateways.

UNIT IV **20 Hrs.**

The Network Layer: Network layer Design issues – Routing Algorithms: The optimality Principle – Shortest path routing – Flooding – Distance Vector Routing – Link State Routing – Hierarchical Routing – Broadcast Routing – Multicast Routing – Routing for Mobile Hosts.

The Transport Layer: The Transport Service: Services provided to the Upper Layers – Transport Service Primitives – Berkeley Sockets.

UNIT V **15 Hrs.**

The Transport Layer: Elements of Transport Protocols.

The Application Layer: DNS-*The Domain name System.*

Network Security: Cryptography – Introduction to Cryptography – Substitution Ciphers – Transposition Ciphers – **Symmetric-Key Algorithms:** DES – Public-Key Algorithms – **Digital Signatures:** Symmetric-Key Signatures – Public-Key Signatures.

Note : *Italics* denotes Self Study Topics

TEXT BOOKS

1. **Andrew S. Tanenbaum, David J. Wetherall,** *Computer Networks***,** Pearson Education, Asia, Fifth Edition 2012.

REFERENCE BOOKS

1. **Miller**, *Data and Network Communications*, Vikas Publications, 2001.
2. **William A. Shay,** *Understanding Data Communication and Networks*, Second Edition, Vikas Publications, 2001.

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SEMESTER V

Core Paper XI

SOFTWARE ENGINEERING

Instructional Hrs. : 75 **Sub. Code: 11CSUC511/ 08CAUC511/ 15ITUC306/ 08CTUC511**

Max. Marks: CIA -25; ESE -75 **Credits: 4**

Objective: To make the students understand the basic concepts of Software development.

UNIT I **15 Hrs.**

Introduction – The Evolving Role of Software - Software Crisis – Software Myths – *Software Engineering Layered Technology*- Software Process- Software Process Models – Prototyping model- Evolutionary Software Process models.

UNIT II **15 Hrs.**

Analysis concepts & Principles: Requirements analysis and elicitation for Software – Analysis principles - Software prototyping – Specification. Analysis Modeling: data modeling – functional modeling and information flow – *behavioral modeling*.

UNIT III **15 Hrs.**

Design Concepts & Principles: The design process – design principles – design concepts – effective modular design. User Interface Design – The golden rules – UID – Task analyzing and modeling – Interface Design Activities – *Implementation Tools* – Design Evaluation.

UNIT IV **15 Hrs.**

Component level design: Structured Programming – Comparison of Design notations Software Testing techniques – *Software Testing fundamentals* – Test case design - White Box testing – Basis path testing – control structure testing – Black Box testing.

UNIT V **15 Hrs.**

Software testing strategies – A Strategic approach to Software testing - *Unit Testing* – Integration testing – Validation testing – System testing - **Object oriented Design:** Design for Object Oriented Systems – System Design process – The object Design Process.

Note: *Italics* denotes Self Study Topics

TEXT BOOK:

Roger S.Pressman , *Software Engineering*, 5th Edition. TMH Publishers.

REFERENCE BOOKS :

1. Ian Somerville, *Software Engineering*, 6th Edition, Pearson Education Publishers, 2001.

2. Watts S. Humphery, *A discipline for Software Engineering*, Pearson Education Publishers, 2001.

SEMESTER V

Core Paper XII

OPEN SOURCE COMPUTING

Instructional Hrs. : 75 **Sub. Code: 15CSUC512/ 15CAUC512/**

Max. Marks: CIA -25; ESE -75 **Credits: 4**

Objectives:

1. To expose students in open source computing environment and introduce them to use open source packages
2. Explore implementations of some of the underlying technologies of open source applications.

UNIT - I **15 hrs**

Introduction to Android: A Little Background – What Android Isn't – An Open Platform for Mobile Development – Native Android Applications – Android SDK Features – Introducing the Open Handset Alliance – What does Android run on? – Why develop for Mobile? – Why develop for Android? – **Introducing the Development Framework**: What comes in the box? – Understanding the Android Software Stack – The Dalvik Virtual Machine – Android Application Architecture.

UNIT - II **15 hrs**

Developing for Android: What you need to begin –Downloading and Installing the Android SDK – Developing with Eclipse – Using the Android Developer tools Plug-In for Eclipse – Using the Support Package –**Creating your first Android Application**: Creating a New Android Project – Creating an Android Virtual Device – Creating Launch Configurations – Running and Debugging your Android Application – Types of Android Applications – Android Development Tools.

UNIT - III **15 hrs**

Creating Applications and Activities: What makes an Android Application? – Introducing the Application Manifest File – Using the Manifest Editor the Android Application Lifecycle – Understanding and application's priority and its process states – Introducing the Android Application Class – A closer look at Android Activities.

UNIT - IV **15 hrs**

Audio, Video and Using the Camera: Playing Audio and Video – Manipulating Raw Audio – Creating a Sound Pool – Using Audio Effects – Using the Camera for taking Pictures – Recording Video – Using Media Effects – Adding Media to the Media Store.

UNIT - V **15 hrs**

Bluetooth, NFC, Networks and Wi-Fi: Using Bluetooth – Managing Network and Internet Connectivity – Managing Wi-Fi – Transferring Data using Wi-Fi Direct – Near Field Communication. **Telephony and SMS:** Using Telephony – Introducing SMS and MMS.

TEXT BOOK:

Reto Meier. 2012. **Professional Android 4 Application Development**. Wiley India Pvt Ltd.

REFERENCE BOOK:

Paul Deitel, Harvey Deitel, Abbey Deitel and Michael Morgano. **Android for Programmers An App-Driven Approach.**

SEMESTER V

Practical Lab V: Open Source Computing Lab

Instructional Hrs. : 75 **Sub. Code : 15CSUCP05 / 15CAUCP05**

Max. Marks : CIA - 40; ESE -60 **Credits: 3**

Objective : To make the students understand the basic concepts of .NET Programming.

1. Creating an app to display Hello World.
2. Creating an Android Simple Login Application.
3. Creating Simple Converter Application in Android.
4. Creating Calculator App in Android.
5. Creating simple Home Screen Widget in Android.
6. Creating Android Chat App in Android.
7. Creating Simple Android Camera Application.
8. Creating Basic List View Demo in Android.
9. Creating a simple Web Browser in Android.
10. Creating Google Map in Android.

ELECTIVE PAPERS FOR FIFTH SEMESTER

Elective I

COMPUTER GRAPHICS AND MULTIMEDIA

Instructional Hrs. : 90 **Sub. Code: 15CAUE511**

Max. Marks: CIA -25; ESE -75 **Credits: 5**

Objective: To make the students learn graphics and multimedia fundamentals.

UNIT I **18 Hrs.**

Output Primitives: Points and Lines – Line-Drawing algorithms – Loading frame Buffer – Line function – Circle-Generating algorithms – Ellipse-generating algorithms. **Attributes of Output Primitives:** Line Attributes – Curve attributes – Color and Grayscale Levels – Area-fill attributes – *Character Attributes*.

UNIT II **18 Hrs.**

2D Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations. **2D Viewing:** The Viewing Pipeline – Viewing Co-ordinate Reference Frame – Window-to-Viewport Co-ordinate Transformation - *2D Viewing Functions* – Clipping Operations.

UNIT III **18 Hrs.**

Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats. **Image:** Image Types – Seeing Color – Color Models – *Basic Steps for Image Processing* – Scanner – Digital Camera – Specification of Digital Images – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT IV **18 Hrs.**

Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – *Basics of Staff Notation* – Sound Card – Audio Transmission – Audio File formats and CODECs–Audio Processing Software.

UNIT V **18 Hrs.**

Video: Analog Video Camera – Video File Formats and CODECs –Video Editing Software. **Animation:** Types of Animation – Computer Assisted Animation – *Creating Movement* – Principles of Animation – Some Techniques of Animation – Animation on the Web- 3D Animation– Rendering Algorithms.

Note: *Italics* denotes Self Study Topics

TEXTBOOKS :

1. Donald Hearn, Pauline Baker M., *Computer Graphics* - 2nd edition, PHI. (UNIT-I: 3.1-3.6,4.1-4.5 & UNIT-II: 5.1-5.4,6.1-6.5)
2. **Ranjan Parekh,** *Principles of Multimedia***,** Tata McGraw Hill, New Delhi, 2011. (UNIT-III: 4.1-4.7,5.1-5.17 & UNIT-IV: 7.1-7.4,7.8-7.14,7.18-7.20,7.22,7.28 & UNIT-V: 8.1,8.2,8.10,8.12,9.5-9.11,9.15)

REFERENCE BOOKS :

1. Amarendra N Sinha, Arun D Udai , *Computer Graphics* – TMH.
2. Tay Vaughan, *Multimedia: Making It Work* – 7th edition, TMH.

ELECTIVE PAPERS FOR FIFTH SEMESTER

Elective I

Big Data Analysis

Instructional Hrs. : 90 **Sub. Code: 15CSUE531/15CAUE521/ 15ITUE531/15CTUE521**

Max. Marks: CIA -25; ESE -75 **Credits: 5**

OBJECTIVE:

1. To understand the challenges in architectures to store, and access the big data, perform analytics on big data for data intensive applications.
2. Bringing the students for achieving focused development and advancement in the field of big data analysis.
3. Gain conceptual understanding of hadoop distributed file system
4. Understanding of concepts of map and reduce and functional programming.

UNIT - I **14 hrs**

Introduction: Data mining and predictive analytics - The behavior and benefits of predictive models - Applications of predictive analytics - Reaping the benefits, avoiding the pitfalls - What is Big Data? - How much value does Big Data add?- **Using Predictive Models :** objectives - Decision making - challenge – Discussion - Override rules (business rules)

UNIT - II **18hrs**

Analytics, Organization and Culture: Embedded analytics - Learning from failure - A lack of motivation - A slight misunderstanding - Predictive, but not precise - Great expectations - Understanding cultural resistance to predictive analytics. **The Value of Data :** What type of data is predictive of behavior? - Added value is what's important - Where does the data to build predictive models come from? - The right data at the right time - How much data do I need to build a predictive model?

UNIT - III **20hrs Ethics and**

Legislation: A brief introduction to ethics - Ethics in practice - The relevance of ethics in a Big Data world - Privacy and data ownership - Data security – Anonymity - Decision making. **Types of**

Predictive Models : Linear models - Decision trees (classification and regression trees) - (Artificial) neural networks - Support vector machines (SVMs) – Clustering - Expert systems (knowledge-based systems) - What type of model is best? - Ensemble (fusion or combination) systems - How much benefit can I expect to get from using an ensemble? - The prospects for better types of predictive models in the future.

UNIT - IV **20 hrs**

The Predictive Analytics Process: Project initiation - Project requirements - Is predictive analytics the right tool for the job? - Model building and business evaluation – Implementation - Monitoring and redevelopment - How long should a predictive analytics project take? **How to Build a Predictive Model** : Exploring the data landscape - Sampling and shaping the development sample - Data preparation (data cleaning) - Creating derived data - Understanding the data - Preliminary variable selection (data reduction) - Pre-processing (data transformation) - Model construction (modeling) - Validation: Selling models into the business - The rise of the regulator.

UNIT - V **18 hrs**

Text Mining and Social Network Analysis : Text mining - Using text analytics to create predictor variables - Within document predictors - Sentiment analysis - Across document predictors - Social network analysis - Mapping a social network. **Hardware, Software and All that Jazz** : Relational databases – Hadoop - The limitations of Hadoop - Do I need a Big Data solution to do predictive analytics? - Software for predictive analytics

TEXT BOOK:

Steven Finlay. 2014. **Predictive Analytics, Data Mining and Big Data: Myths, Misconceptions and Methods.** [First Edition]. Macmillan Publishers Limited.

REFERENCE BOOKS:

1. *Chuck Lam* . 2012. **Hadoop In Action**. [First Edition]. Manning Publication. USA.

ELECTIVE PAPERS FOR FIFTH SEMESTER

Elective I

E-Commerce

Instructional Hrs:90 **Sub.Code: 15CAUE531**

Max.Marks:CIA-25;ESE-75 **Credits: 5**

Objective: To make the students to learn the concept of E-Commerce .

UNIT I **18 Hrs**

The Dawn of Manufacturing Industry: *What is E-commerce*-The Drivers-Myths you should know-Advantages and issues in E-Commerce-Benefits and limitations of the internet-Role of E-strategy-Value chain in E-commerce-integrating E-Commerce-E-Commerce business models-**The World Wide Web:** Internet Service Provider-Web fundamentals-Internet Services and Languages.

UNIT II **18 Hrs**

E-strategies And Tactics: *The building life cycle from* –From page to stage-plan the site-Define the audience and the competition-build site content –Define site structure-**Managerial and customer related issues :** Hardware,Software,Security and setup-The Design Phase-The Marketing Phase-The Fulfillment Phase-The Maintenance and Enhancement Phase.

UNIT III **18Hrs**

Website Evaluation and Usability Testing : Anatomy of a site-Color and its Psychological Effects-Site Evaluation Criteria-Getting Personal-What's the Big Fuss Over Cookies?-*What makes Website Usable?*-Site content and Traffic Management-**Hosting your Website :** Choosing an ISP-Registering your Domain.

UNIT IV **18 Hrs**

Getting The Money: Requirements for Internet- Based Payments-**How would you like to Pay?:** Credits Cards-Debit Cards-Smart Cards-**E-security and USA Patriot Act :** The Virus: Computer Enemy Number One-Security Protection and Recovery-*Role of Bio-metrics.*

UNIT V **18 Hrs**

E-Core Values : Ethical,Legal,Taxation,and International Issues :-What is computer Ethics-Major Threats to Ethics-Improving Ethical climate-The Privacy Factor-**Legal Issues :** The question of liability-TORT Law on the internet-Copyrights,Trademarks and Tradenames-Taxation Issues-Legal disputer On the internet-WebLinking and Domain Name Disputes-*Encryption Laws.*

Note: Italics Denotes Self Study Topics

TEXT BOOK :

1.Elias M.Award,Electronic Commerce-From Vision to fulfilment Prentice Hall of India,New Delhi2002.

Skill Based Subject III

SEMESTER V

IMAGE EDITING TOOL (PHOTOSHOP) LAB

Instructional Hrs. : 45 **Sub. Code: 11CAUS503**

Max. Marks: CIA -40; ESE -60 **Credits: 3**

Objective: To give hands on experience in Photoshop

1. Design a greeting card for birthday with various effects for text.
2. Apply various filter effects for an image.
3. Design the front page of the college calendar using gradient.
4. Create a pattern using pattern stamp tool & clone stamp tool.
5. Design wallpaper using pattern maker.
6. Create a digital drawing.
7. Create a wedding card using various text Formatting.
8. Design a web page layout.
9. Merge images using layer palette.
10. Apply different editing and color options for an image.

SEMESTER VI

Core Paper XIII

WIRELESS APPLICATION PROTOCOL

Instructional Hrs. : 75 **Sub. Code: 11CSUE612/ 11CAUC613/ 11CTUE632**

Max. Marks: CIA -25; ESE -75 **Credits: 4**

Objective: To make the students to know the Techniques in WAP.

UNIT I **16 Hrs.**

Introduction to WAP : Wireless Application Protocol (WAP) overview- Work of WAP - WAP and Internet Standards-Merits and Demerits of using WAP- WAP Components.

UNIT II **16 Hrs.**

WAP Architectural Issues : WAP Architecture- WAP Protocol stack-Wireless application environment - How does WAP work? - optimal WAP bearer - Wireless Session Protocol - Wireless Transaction Protocol - Wireless Datagram Protocol - Wireless Transport layer Security - WAP devices - WAP is based on XML - Wireless Markup Language - Mobile originated Examples of WAP Architecture - WAP Component Technologies.

UNIT III **15 Hrs.**

WAP Gatways and Hosting: WAP Gateway - Kannel: Open source4 WAP and SMS Gateway - Requirements - External Interfaces - Internals: Hosts,Modules,Threads - Special Servers/gateways - Free hosting for WAP pages - Wireless Operating Systems - Registering a WAP domain - WAP browsers – WAP gateway services – Architecture of the WAP gateway.

UNIT IV **13 Hrs.**

Wireless Markup Language: Wireless Markup Language – Understanding Wireless Markup Language – Functions of WAP – Necessity of an Emulator – Basic structure of WML – WML Architecture. 3G and beyond: Mobile Wireless – What is 3G? – Applications – Bluetooth Technology.

UNIT V **15 Hrs.**

WAP Security: WLAN Security Issues: Wired Versus Wireless – Physical Security – User Authorization – Eavesdropping counter measures – Wireless Security Considerations – Security Concerns – WAP Secutiry Roadmap – Wireless Security Risks – Firewall – Firewall and Complete Security.

Note: *Italics* denotes Self Study Topics

TEXT BOOK:

1.Er.V.K.Jain, *Programming WAP,WAP Servlets with WML,WML Script, Smart Card and 3G*, Published by Dream tech press.

SEMESTER VI

Core XIV

GUI TOOLS

Instructional Hrs. : 75 **Sub. Code: 15CSUC614/ 15CAUC614**

Max. Marks: CIA -25; ESE -75 **Credits: 4**

Objective: To give awareness of graphical user interface concepts and teach Visual Basic.

UNIT I **15 Hrs.**

Visual Basic Building Blocks: Forms – Using Controls – Exploring Properties – A First Look at Methods and Events, **Using Visual Basic's Default Controls**: Introduction to the Intrinsic Controls – Working with Text Box and Label – *Controls for Making Choices* – Special Purpose Controls- Working with Multiple Controls at Design time – Working with the Controls Collection – Working with Control Arrays.

UNIT II **13 Hrs.**

Event Procedures: Introducing Events – Handling Events in Programs – Understanding Event Sequences, **Menus and Toolbars:** Creating Menu Bar – Creating Pop-Up Menus – Using Toolbars in Visual Basic, **Dialog Boxes:** *Message Box* – InputBox – Dialog Boxes – User defined Dialog Box.

UNIT III **16 Hrs.**

Using Variables and Constants: Introduction to Variables – Variable Declarations – Variable Arrays – Option Explicit statement – Constants, **Visual Basic Programming Fundamentals:** Writing Statements – Assignment Statements – Math Operations – Strings – Formatting Results, **Control Statements :** *If statement* – Multiple If statement – For Loop – Do Loop – Debugging Programs – Error Trapping, **Managing Project:** Using Procedures and Functions – Working with Multiple Forms – Managing Components in project.

UNIT IV **16 Hrs.**

Data Access Objects(DAO) : Introduction to DAO – Opening an Existing Database – Recordset types – Placing Information Onscreen – Positioning the Record Pointer – Using Filters, Indexes, and Sorts – Modifying multiple records using loops and SQL statements – Record Manipulation (Add, Edit, Update and Delete) - *Introducing Transaction Processing*.

UNIT V **15 Hrs.**

ActiveX Data Objects (ADO): Introducing ADO – Using the ADO Data Control – Using the DataGrid Control – *Using ActiveX Data Objects*, **Creating Reports:** Creating a Simple Data Reports – Enhancing Data Reports.

Note: *Italics* denotes Self Study Topics

TEXT BOOK:

1. Brian Siler and Jeff Spotts, *Special Edition Using Visual Basic 6*, PHI Private Ltd., New Delhi, 2001.

REFERENCE BOOKS:

1. Gray cornel, *Visual Basic 6 from the Ground up*, TMH.

2. Scott Warner, *Teach Yourself Visual Basic 6*, Tata McGraw Hill Edition, 2000.
3. *Visual Basic 6 Programming* by Content Development Group, TMH Publishers 2002.

SEMESTER VI

Practical VI

GUI LAB

Instructional Hrs. : 75 **Sub. Code: 15CSUCP06/ 15CAUCP06**

Max. Marks: CIA - 40; ESE - 60 **Credits: 3**

Objective : To make the students to get practical knowledge in the basic concepts of Visual Basic.

1. Write a code to Scroll the text "Visual Programming" from left to right and right to left on client area.
2. Write a code for adding, removing and clearing items using Dropdown Combo Box.
3. Create a simple calculator using control array.
4. Using Flex Grid Control write a program that calculate addition, subtraction, multiplication and division of numbers ranging from 1 to 12.
5. Create a Note pad using Rich Text Box. (Use the required dialog boxes)
6. Write a code to maintain an Inventory Database and Display it using Data Grid Control. (Perform Connection through Data Control)
7. Build a master form to manipulate (add, delete, update) the Train master. (Create the required Train master table)
8. Design a transaction form (new, save) for Railway ticket reservation. (Create the required Train master and Ticket_book transaction tables)
9. Build a master form to manipulate (add, delete, update) the Employee master. (Create the required Employee master table)
10. Design a transaction form (new, save) for Employee Payslip preparation. (Build the required Employee master and Payslip transaction tables)
11. Build a master form to manipulate (add, delete, update) the Student master. (Create the required Student master table)
12. Design a transaction form (new, save) for Student fees payment transaction.(Build the required Student master and Fees_pay transaction tables)

ELECTIVE PAPERS FOR SIXTH SEMESTER

Elective II

SOFTWARE PROJECT MANAGEMENT

Instructional Hrs. : 90 **Sub. Code: 08CAUE612**

Max. Marks: CIA -25; ESE -75 **Credits: 5**

Objective: To make the students understand software project management techniques.

UNIT I **18 Hrs.**

Introduction to Software Project Management: Introduction – Why is Software Project Management is Important? – What is a Project? – *Software Project Vs other Types of Project* – Contract Management and Technical Project Management – Activities Covered by Software Project Management – Plans, Methods, Methodologies – Some Ways of Categorizing Software Projects. Stepwise: an Overview of Project Planning.

UNIT II **18 Hrs.**

Programme Management and Project Evaluation: Programme Management – Managing the Allocation of Resources within Programmes – Strategic Programme Management – Creating a Programme – Aids to Programme Management – Benefits Management – Evaluation of Individual Projects – Technical Assessment – Cost-Benefit Analysis – Cash Flow Forecasting – Cost-Benefit Evaluation Techniques – Risk Evaluation. Software Effort Estimation: Where are Estimation Done? – Problem with Over and Under-Estimates – *Basic for Software Estimating* - Software Effort Estimation Techniques – Expert Judgment – Estimating by Analogy.

UNIT III **18 Hrs.**

Activity Planning: The Objectives – When to Plan? – Project Schedules – Project and Activities – Sequencing and Scheduling Activities – *Network Planning Models.* **Risk Management:** Risk – Categories. Resource Allocations: Introduction – Nature of Resources – Identifying the Resource Requirements. **Monitoring and Control:** Creating Framework – Collecting the Data – Visualizing Progress – Cost Monitoring – Earned Value Analysis – Prioritizing Monitoring – Getting the Project Back to Target – Change Control.

UNIT IV **18 Hrs.**

Managing People and Organizing Terms: Understanding Behavior – Organizational Behavior – Selecting the Right Person for the Job – Instruction in the Best Methods – Motivation – Working in Groups – Becoming a Team – Decision Making – *Leadership* – Organizational Structures – Dispersed and Virtual Teams – Influence of Culture – Stress – Health and Safety.

UNIT V **18 Hrs.**

Software Quality: The Place of Software Quality in Project Planning – Importance of Software Quality – Defining Software Quality – ISO 9126 – Practical Software Quality Measures – Product vs Process Quality Management – External Standards – Techniques to help enhance Software Quality – *Quality Plans* – Content of a Project Plan.

Note: *Italics* denotes Self Study Topics

TEXT BOOK:

Bob Hughes and Mike Cotterell, *Software Project Management*, Fourth Edition, Tata McGraw Hill Publication Company Limited, New Delhi, 2006.

ELECTIVE PAPERS FOR SIXTH SEMESTER

Elective II

SOFTWARE TESTING

Instructional Hrs. : 90 **Sub. Code: 15CSUC613/ 15CAUE622/ 15ITUC512**

Max. Marks: CIA -25; ESE -75 **Credits: 5**

Objective: To make the students learn various software testing approaches and metrics.

UNIT I **18 Hrs.**

Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models.

UNIT II **18 Hrs.**

White-Box Testing: Static Testing – *Structural Testing* –Challenges in White-Box Testing. **Black-Box Testing:** What is Black-Box Testing? - Why Black-Box Testing? –When to do Black-Box Testing? – How to do Black-Box Testing? – *Challenges in White Box Testing*.

UNIT III **18 Hrs.**

Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash. **System Testing:** System Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing.

UNIT IV **18 Hrs.**

Acceptance Testing: Acceptance Testing – Summary of Testing Phases. **Performance Testing:** Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges.

UNIT V **18 Hrs.**

Test Planning, Management, Execution and Reporting: Test Planning – Test Management – *Test Process* – Test Reporting – *Best Practices*.

Note: *Italics* denotes Self Study Topics

TEXT BOOK:

1. Srinivasan Desikan & Gopalswamy Ramesh, *Software Testing Principles and Practices*, 2006, Pearson Education, Seventh Edition, 2009.

(UNIT-I: 2.1-2.5 UNIT-II: 3.1-3.4, 4.1-4.4 UNIT III: 5.1-5.5, 6 .1-6.5

(UNIT IV: 6.6-6.7, 7.1-7.6 UNIT-V: 15.1-15.6)

REFERENCE BOOKS:

1. **Renu Rajani, Pradeep Oak**, *Software Testing*, TMH, Fifth Edition, 2007.
2. **William E.Perry**, *Effective Methods of Software Testing* , Wiley India, Third Edition, 2008.

ELECTIVE PAPERS FOR SIXTH SEMESTER

Elective II

Internet Of Things

Instructional Hrs. :90 **Sub. Code : 15CSUE622 / 15CAUE632/15ITUE612/ 15CTUE622**

Max. Marks :CIA-25 ; ESE -75 **Credits:5**

OBJECTIVE:

1. The Internet of Things (IoT) is a course about the new paradigm of objects interacting with people, with information systems, and with other objects. The course will focus on creative thinking and on hands-on project development. The students will learn:
2. IoT concepts and IoT technologies
3. Creative thinking techniques and Co-creation techniques

UNIT – I **14 hrs**

Introduction – Concepts behind the Internet of Things: The IoT paradigm- Smart objects-Bits and atoms-Goal orientation-Convergence of technologies, Internet in general and Internet of Things.

UNIT - II **18hrs**

Technologies behind the Internet of Things: RFID + NFC - Wireless networks + WSN - RTLS + GPS- Agents + Multi agent systems- layers-protocols-packets- services- performance parameters of a packet network as well as applications such as web- Peer-to-peer- sensor networks, and multimedia.

UNIT - III **20 hrs**

Creative thinking techniques : Modifications - Combination scenarios - Breaking assumptions - Solving problems, Transport services: TCP, UDP, socket programming-Network layer: forwarding & routing algorithms (Link, DV), IP-addresses, DNS, NAT, and routers-Local Area Networks, MAC level, link protocols such as: point-to-point protocols, Ethernet, WiFi 802.11, cellular internet access, and Machine-to-machine.

UNIT – IV **20hrs**

Mobile Networking: Roaming and handoffs-mobile IP- and ad hoc and infrastructure less networks. Realtime networking: soft and real time- quality of service/information- resource reservation and scheduling and performance measurements.

UNIT – V **18 hrs**

IoT definitions: overview, applications, potential & challenges, and architecture. IoT examples: Case studies, e.g. sensor body-area-network and control of a smart home.

TEXT BOOK:

Lu Yan , Yan Zhang , Laurence T. Yang , Huansheng Ning.2008. The Internet of Things: From RFID to the Next-Generation Pervasive Networked Systems

REFERENCE BOOK:

Kurose James F., Ross Keith W.2010. **Computer networking : a top-down approach. [Fifth Edition]**.Boston, Mass. Pearson Co.

Skill Based Subject IV

SEMESTER VI

DTP DESIGN TOOLS (PAGEMAKER AND CORELDRAW) LAB

Instructional Hrs. : 45 **Sub. Code: 11CAUSP04**

Max. Marks: CIA - 40; ESE - 60 **Credits: 3**

Objective: To make the students gain practical knowledge in Pagemaker and CorelDraw.

Pagemaker

1. Prepare a Bio-data. Apply font size, tabs, alignment, indentation and Text wrap.
2. Create a greeting card for New Year.
3. Create an Advertisement for a job in well-known form.
4. Create a Newspaper Report.
5. Create a Document by importing graphic image from Clip Art.

Corel Draw

1. Create a Document. Apply different formats to design it.
2. Combine a Text in the word processor and the graphic in Corel draw by using Print Merge.
3. Create a Nested shapes. Apply rotation, lock and fill color options.
4. Create any design using Line Drawing Method.
5. Create an Advertisement using an object, with combine and group options.

SELF LEARNING PAPER

1. COMPUTER ETHICS

Instructional Hrs.: 100 **Sub. Code: 13CSUSL01**
Max. Marks: 100 **Credits: 5**

Objective: To make the students understand the concept of using computers in social context, moral and legal issues in computer field.

UNIT I

Computer Ethics: Introduction – New possibilities and Vacuum of Politics – Filling the Vacuum, Clarifying conceptual muddles – Computers and used in a Social Context, Moral and Legal Issues - Are Computer Ethical issues Unique? The role of Analogy in Computer Ethics.

UNIT II

Professional Ethics: Characteristics of professions – The system of profession – Is Computing a Profession? – Are Computer Professionals "Professionals?" – Software Engineering – Professional Relationships – Conflicting Responsibilities – Code of Ethics and professional conflicting Responsibilities – Code of Ethics of Professional conduct – Collective Responsibility.

UNIT III

Ethics and the Internet: Ethics online – Three morally significant Characteristics – Hacking Ethics – New Species of old Crime – Netiquette – Policy Approaches.

UNIT IV

Privacy: Understanding the "Computers and Privacy Issue" – Reframing the Computers and Privacy as a social Good – Legislative Background – Global perspective – proposals for Better privacy protection.

UNIT V

Property Rights in Computer Software: Definitions – The problem current legal protection – The philosophical Basis of property - Consequentiality Arguments – Conclusions from the philosophical analysis of property – software copying is immoral of illegal.

TEXT BOOK

1. Deborah G.Johnson, Computer Ethics, Pearson Education, Third Edition, 2001.

SELF LEARNING PAPER

2. **How the Internet Works**

Instructional Hrs.: 100 **Sub. Code: 13CSUSL02**

Max. Marks: 100 **Credits: 5**

Objective: To make the students understand the basics of internet and how its components work

UNIT – I

Understanding the Internet's Underlying Architecture: What is the Internet – How Computer Networks Send Data across the Internet – How TCP/IP Works – How Internet Addresses and Domains Work – How Routers Work.

UNIT – II

Communicating on the Internet - How Email Works: How Email is delivered over the Internet – How Email Software Works – How a Mailing List Works – How Email is sent between Networks – How Encryption Can Keep Email Private. **How the World Wide Web Works**: How Web Page Work – How Web Browser Work.

UNIT – III

Using the World Wide Web: How Internet Searching Works – How Google Works – How Map Sites Work – How Wikis and Wikipedia Work.

UNIT – IV

Using Common Internet Tools: How Agent Work – How Java, ActiveX and JavaScript Work – How CGI Scripting Works. **Enjoying Entertainment and Multimedia on the Internet:** How iPods, iTunes and Podcasting Work. **Shopping and Doing Business on the Internet:** Shopping on the Internet.

UNIT – V

Protecting yourself on the Internet: How firewalls Work – How Hackers can cripple the Internet and Attack your PC - How Viruses Work – How Internet Sites can invade your Privacy – The Dangers of Spyware and Phishing – Cryptography, Privacy and Digital Certificates.

TEXT BOOK:

1. Preston Gralla, *How the Internet Works*, Pearson Education, Eighth Edition, 2012.

SELF LEARNING PAPER

3. GREEN COMPUTING

Sub. Code : 13CSUSL03

Max. Marks : ESE -100 **Credits: 5**

Objective : To gain the knowledge about green computing.

UNIT – I

What Is Green Computing?: Knowing What Green Computing Means - Getting Started with Green Computing - Speaking Green Jargon. Checking Out Your Carbon Footprint: Knowing Your Carbon Footprint ABCs - Facing the Facts - Reducing Your Footprint. Assessing What You've Got: Starting an Inventory of Your Computing Equipment - Understanding How You Use Devices - Working Better with What You Have- Developing computer habits that save energy - Making the Case for a New Purchase.

UNIT – II

Giving Your Computer a Green Makeover:Weighing Your Makeover Possibilities - Shrinking the Elephant on Your Desktop - Gaming and More with a Greener Video Card -Adding Memory without Ginseng - What's a Terabyte among Friends? Improving Your Laptop Battery - Greening Your Power Supply. Buying a Green Computer: Understanding what makes a computer green-Matching a computer to your needs- Researching Your Options - Checking Out Small, Green, Niche Computers - Making Your Purchase.

UNIT – III

Choosing Earth-Friendly Peripherals: Planning Your Purchases of Green Peripherals - Sharing Peripherals - Picking Printers - Seeing Some Specialty Drives - Selecting Keyboards and Mice - Calling Router Rooter - Making the Purchase — and What to Do Afterward.

UNIT – IV

Recycling Your Computer: Facing the e-Waste Facts - Exporting the e-Waste Problem -Seeing Reasons to Recycle Computers - Planning Your Computer's Retirement - Wiping Your System Clean - Finding Great New Uses for an Old Computer - Going Back to the Source (Almost) - Recycling Computer Supplies, Too - Taking Local Action to Clean Up Global Computer Waste.

UNIT – V

Print Less, Breathe More - Seamless Sharing across Systems: Sharing at Home - Benefits of networking - Types of networks - Setting Up a Home Network -Securing the wireless airwaves - Sharing the Easy Stuff - Sharing printers - Sharing media files - Figuring out what it is: hardware, software, or both? - Keeping Your Footprint Low at Home - Working with backups - Cleaning things up- Monitoring your resources Ten Best Ways to Make Your Computer Greener

TEXT BOOKS

1. Woody Leonhard and Katherine Murray, Green Home Computing for Dummies, Wiley Publishing, Inc.

REFERENCE BOOKS

1. John Lamb, The Greening of IT , IBM Press, 2009.
2. Jason Harris, Green computing and Green IT Best Practices.

SELF LEARNING PAPER

4. SECURITY IN COMPUTING

Instructional Hrs.: 100 **Sub. Code: 13CSUSL04**

Max. Marks: 100 **Credits: 5**

Objective: To make the students understand the basic concepts of protection of information properly from theft and corruption, while allowing the information to remain accessible and productive to its intended users.

UNIT I

What does "Secure" Mean? – Attacks – The meaning of computer security – computer criminals – methods of defense. Elementary cryptography: Terminology and Background – substitution ciphers.

UNIT II

Transpositions – Making good Encryption Algorithms – The data encryption standard (DES) – The AES Encryption Algorithm – Public key encryption – The uses of Encryption.

UNIT III

Program Security: Secure programs – non malicious program errors – virus and other malicious code – controls against program threats.

UNIT IV

Security in networks: Network concept - Threats in networks – network security controls secure E-Mail.

UNIT V

Protection in General purpose operating systems: protected objects and methods of protection – control of access of general objects – File protection mechanisms – user authentication. Database Security: Introduction to databases – security requirements. Administering security: security planning.

TEXT BOOK

1. Charles P.Pfleeger & Shari Lawrence Pfleeger, Security in Computing, Pearson Education, Third Edition 2004.