



**ETHIRAJ COLLEGE FOR WOMEN[AUTONOMOUS]
CHENNAI – 600 008**

**BACHELOR OF COMPUTER APPLICATIONS
[Self-Supporting]**

Syllabus to be effective from 2018-2019

ETHIRAJ COLLEGE FOR WOMEN
[AUTONOMOUS]
BACHELOR DEGREE COURSE –UNDER THE FACULTY OF COMPUTER APPLICATIONS
CHOICE BASED CREDIT BASED [CBCS]
[Effective from the academic year 2018 – 2021]

INTRODUCTION

Ethiraj College for Women has introduced choice based credit system of education. Each academic year is divided into two semesters. Each semester will have a minimum of 90 working days and each day will have five working hours. Teaching is organized into modular pattern of credit courses. Credit is normally related to the number of hours a teacher teaches a particular subject. It is also related to the number of hours a student spends learning a subject or carrying out an activity.

PREAMBLE

The objectives of the Programme shall be to provide sound academic base from which an advanced career in Computer Application can be developed. Conceptual grounding in computer usage as well as its practical business application will be provided

REGULATIONS

ELIGIBILITY OF ADMISSION

Candidates for admission for the first year of the degree of Bachelor of Computer Applications course, shall be required to have passed the Higher Secondary Examinations[Academic or Vocational stream] conducted by the Govt. of Tamil Nadu or an Examination accepted as equivalent thereto by the Syndicate of the University of Madras. The Candidate should have Mathematics/Business Mathematics/Computer Science/Statistics as one of the subjects with or without Computer Science in Higher Secondary Examinations.

ELIGIBILITY FOR THE AWARD OF THE DEGREE

A candidate shall be eligible for the award of the Degree only if she has undergone the prescribed course of study in the College for a period of not less than three academic years, passed the Examination of all the six semesters prescribed.

COURSE OF STUDY

The main subject for the Bachelor Degree shall consist of the following:

PART I	: Foundation Course - Languages
PART II	: Foundation Course – English
PART III	: Major and Allied Subjects
PART IV	: Non-Major Electives

DURATION

Each academic year is divided into two semesters. The first academic year shall comprise the first and second semesters, the second academic year the third and fourth semesters and the third academic year the fifth and sixth semesters respectively. The odd semesters shall consist of the period from June to November of each year and the even semesters from December to April of each year. There shall not be less than 450 hours / 90 days for each semester and each day will have five working hours.

MEDIUM OF INSTRUCTION

The Medium of Instruction and Examination [Written and Viva] shall be English

PASSING MINIMUM

A candidate shall be declared to have passed in each paper/practical of the main subject of study wherever prescribed, if she secured NOT LESS than 40/100 in the Examination. She shall be declared to have passed the whole examination, if she passes in all papers and practical wherever prescribed as per scheme of examination.

CLASSIFICATION OF SUCCESSFUL CANDIDATES

I Class, II Class, III Class

COURSE PROFILE

COURSE CODE	COURSE TITLE	CR	MARKS		
			CA	SE	TOT
	SEMESTER – I				
Part I	Language	3	40	60	100
Part II	English	3	40	60	100
CA18/1C/IPC	Core: Introduction to Computers and Programming in C	5	40	60	100
MA18/1A/STM	Allied : Statistics	5	40	60	100
CA18/1C/PR1	Practical I : C Laboratory	2	40	60	100
Part IV	Non-Major Elective : Office Automation	2	-	50	50
Part IV	English Language and Communication Skills-I	3	25	25	50
	SEMESTER – II				
Part I	Language	3	40	60	100
Part II	English	3	40	60	100
CA18/2C/DSC	Core : Data Structures and Programming in C++	5	40	60	100
MA18/2A/OPR	Allied : Operations Research	5	40	60	100
CA18/2C/PR2	Practical II : C++ and Data structures Laboratory	2	40	60	100
Part IV	Non-Major Elective : World Wide Web Using HTML	2	-	50	50
Part IV	English Language and Communication Skills-II	3	25	25	50
	SEMESTER – III				
CA18/3C/CCG	Core : Computer Graphics	3	40	60	100

CA18/3C/CVP	Core : Visual Programming	3	40	60	100
CA18/3C/RAO	Core: RDBMS and ORACLE	3	40	60	100
CA18/3A/CFA	Allied : Financial Accounting	5	40	60	100
CA18/3C/PR3	Practical III : VB and ORACLE Laboratory	3	40	60	100
CA18/3C/PR4	Practical IV : Computer Graphics using C Laboratory	2	40	60	100
Part IV	Environmental Studies	2	-	50	50
Part IV	English Language and Communication Skills-III	3	25	25	50
	SEMESTER – IV				
CA18/4C/PJP	Core: Programming in Java	3	40	60	100
CA18/4C/COS	Core: Operating System	3	40	60	100
CA18/4C/CSA	Core: Computer System Architecture	3	40	60	100
CA18/4A/CMA	Allied : Management Accounting	5	40	60	100
CA18/4C/PR5	Practical V : Java Laboratory	3	40	60	100
CA18/4C/PO1	Term paper and Seminar	2	40	60	100
Part IV	Value Based Education	2	-	50	50
Part IV	English Language and Communication Skills-IV	3	25	25	50
	SEMESTER – V				
CA18/5C/DNT	Core : Dot Net Technologies	4	40	60	100
CA18/5C/CSE	Core : Software Engineering	4	40	60	100
CA18/5C/WEB	Core : Web Technologies	4	40	60	100
CA18/5E/IOT	Elective I : Internet of Things	4	40	60	100
CA18/5C/PR6	Practical VI : Dot Net Laboratory	3	40	60	100
CA18/5C/PR7	Practical VII : Web Technology Laboratory	3	40	60	100
	SEMESTER – VI				
CA18/6C/DCN	Core: Data Communications and networking	4	40	60	100
CA18/6C/CCC	Core: Cloud Computing	4	40	60	100
CA18/6C/CMM	Core: Multimedia	4	40	60	100
CA18/6E/CDM	Elective II : Data Mining	4	40	60	100
CA18/6C/PO2	Mini Project	4	40	60	100
CA18/6C/PR8	Practical VIII : Multimedia Laboratory	3	40	60	100
Part V	Extension Activity	1	-----	-----	
	TOTAL	140			

TEMPLATE FOR EVALUATION PATTERN

EXTERNAL MARKS:

THEORY :

Time : 3 Hours
Maximum Marks : 100

SECTION A [10 X 2 = 20] : Answer ALL 10 questions.
[at least two from each unit]
SECTION B [5 X 8 = 40] : Answer 5 questions out of 7 questions
[at least one from each unit]
SECTION C [2 X 20 = 40] : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

PRACTICAL:

Time : 3 Hours
Maximum Marks : 60

Practical Questions selected by an External Examiner from a Question bank prepared by the department will be given to students to write programs and to execute the same.

TERM PAPER AND SEMINAR VIVA-VOCE:

Maximum Marks : 60

Power point presentation along with documentation of Term paper will be submitted for Viva-Voce.

PROJECT VIVA-VOCE:

Maximum Marks : 60

Software developed along with Documentation will be submitted for Viva-Voce.

PRACTICAL ORIENTED SKILL BASED:

Practical test for two hours for 50 marks will be conducted at the end of the semester

INTERNAL MARKS:

THEORY:

Continuous Assessment				
Test I [2hrs]	Test II [2hrs]	Quiz	Participatory Learning	Total
10	10	10	10	40

PRACTICAL :

Continuous Assessment				
Test I [2hrs]	Test II [2hrs]	Record work	Participatory Learning	Total
10	10	10	10	40

RUBRICS FOR CONTINUOUS EVALUATION

Quiz Understanding Concept/ Logical Sequence/ Answer

Record work Preliminary work/ Content/ Neatness/ On time submission

NON-MAJOR ELECTIVE SUBJECTS [NME 1c]

SEM	COURSE CODE	COURSE TITLE	HRS/WK L T P	CREDITS	END SEM MARKS
I	CA18/1N/COA	Office Automation	2 [0-0-2]	2	50
II	CA18/2N/WWH	World Wide Web design with HTML	2 [0-0-2]	2	50

SYLLABUS

SEMESTER I

Subject : Core – Introduction to Computers and Programming in C

Subject code : CA18/1C/IPC

Teaching hours : 105 hrs.

Credits: 5 L T P : 4-3-0

Objective :

- To make the student understand about various digital circuits.
- To make the students gain knowledge about a programming language.
- To make the student develop their own C programs.

Course Outline :

Unit - I :

Introduction: Programming Languages: Overview - Requisites of a good programming language – Good programming practices – Efficiency of programming – Classification of Languages. Flowcharting Techniques: Introduction to algorithms and flowchart – definition of flowchart – Examples. [20 hrs]

Unit - II :

Digital Systems and Binary Numbers: Binary Numbers – Number – base Conversions- Octal and Hexadecimal Numbers – Complements –Binary Codes . Boolean Algebra and Logic Gates : Basic Definitions-Axioms – Basic Theorems and Properties of Boolean Algebra- Canonical and Standard Forms. Combinational Circuits: Binary Adder/Subtractor–Decoders- Encoders – Multiplexers – Demultiplexers-Sequential Circuits: Flip Flops –RS, JK, D,T flip flops [20 hrs]

Unit III :

C fundamentals- Character set – C tokens – keywords and identifiers – constants, variables – data types - declarations – Operators and Expressions- Arithmetic, unary, relational and logical, assignment, bitwise, comma and conditional operators –Data input/output Operations –Control structures – conditional branching – if, if.. else , switch, while , for, do.. while, break , continue, unconditional branching – go to statement. [25 hrs]

Unit - IV :

Arrays – defining and processing – passing arrays to functions – multi dimensional arrays – Character arrays and string - Functions – defining, accessing functions – functions prototypes – passing arguments – Categories of functions - recursions – storage classes [20 hrs]

Unit - V :

Structures and Unions: Introduction – Array of structures - structures and functions – unions. Pointers – declarations – pointers and arrays – Array of pointers – structures and pointers . Files : creating , processing , opening and closing. [20 hrs]

Books Recommended:

1. Ananathi Sheshaaayee & Sheshaasaayee, Computer Applications in Business and Management, Margham Publications, 7th edition 2009.
2. Digital Design – Fourth Edition, By M.Morris Mano and Michael D.Ciletti, Pearson Publications, 2006.
3. E.Balaguruswamy, Programming in ANSI C , 7th edition, Tata McGrawhill publications, 2016

Books for Reference :

1. Yashavant Kanetkar, Pointers in C, BPB Pub., Fourth edition, New Delhi, 2009.
2. Gottfried B.S., Programming with C, Second edition, TMH Pub. Co. Ltd., New Delhi, 1996.
3. V.Vijayendran, Digital Fundamentals, S.Viswanathan printers & publishers Pvt. Ltd., 2006.

Online Sources:

1. www.techbooksforfree.com
2. www.publications.gbdirect.co.uk/c_book
3. www.electronics-tutorials.ws

QUESTION PAPER TEMPLATE

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] : Answer ALL 10 questions.

[at least two from each unit]

SECTION B [5 X 8 = 40] : Answer any 5 questions out of 7 questions

[at least one from each unit]

SECTION C [2 X 20 = 40] : Answer any 2 questions out of 4 questions

[Not more than one from each unit]

SEMESTER : I

Subject : Practical I – ‘C’ Laboratory

Subject code : CA18/1C/PR1

Teaching hours : 45 hrs.

Credits: 2 L T P : 0-0-3

1. Control statements
2. Functions
3. Arrays and structures
4. Pointers
5. File handling

[Two to three problems under each heading]

PRACTICAL QUESTION PAPER PATTERN :

Time : 3 Hours

Maximum Marks : 60

The External Examiner will prepare the questions on the spot with the help of the question bank.

SEMESTER : II

Subject: Core - Data Structures and Programming in C++

Subject code: CA18/2C/DSC

Teaching Hours: 105 hrs.

Credits: 5 LTP: 4-3-0

Objective:

- The objective of the course is to familiarize students with basic data structure concepts
- To inculcate knowledge on Object-oriented programming concepts using C++
- To make the student develop their own C++ programs.

Course Outline:

UNIT I:

Definition of a Data structure - Arrays: Linear array, Representation of linear array in memory-Traversing linear array-Insertion and Deletion. Linked Lists: Representation of Linked lists in memory-Traversing a Linked List-Searching a Linked List -Insertion into a Linked List-Deletion from a Linked List-Application: Polynomial Addition. Doubly Linked List: Insertion and Deletion. [20 hrs].

Unit II:

Stacks: Representation of Stacks Using Array –Push and Pop Operations-Applications: Infix to Postfix Conversion, Recursion. Queues: Representation of Queues-Enqueue and Dequeue Operation. Trees: Introduction-Binary Trees-Representing Binary Trees in Memory-Traversing Binary Tree [Recursive Procedure]. Graph: Representations of Graph- Traversing: BFS and DFS. [20 hrs].

Unit III:

OOP Paradigm - Basic Concepts of OOP - Benefits of OOP - Application of OOP- Introduction to C++ - Tokens - Keywords - Identifiers - Variables - Operators - Manipulators - Expressions and Control Structures - Functions - Function Prototyping - Parameters Passing in Functions - Values Return by Functions - Inline Functions–Recursion-Function Overloading. [20 hrs]

Unit IV:

Classes and objects – Constructors and Destructors – Operator Overloading and Type Conversions – Inheritance – Pointers, Virtual Functions and Polymorphism. [25 hrs]

Unit V:

MOOC: Managing Console I/O Operations – Files – File operations – File pointer – Error Handling during file operations – Command line arguments. [20 hrs]

Recommended Text book :

1. Seymour Lipschutz, Data Structures- Mc Graw Hill, Revised first Edition, 2014.
2. Sartaj Sahni, Data Structures, Algorithms and Applications in Java University Press, 2008.
3. E. Balagurusamy - Object Oriented Programming with C++ - TMH, 6th Edition, 2013.

Books for Reference :

1. E. Horowitz and S. Shani Fundamentals of Data structures in C++, Galgotia Pub 1999.
2. Horowitz S. Shani, and S. Rajasekaran, Computer Algorithms, Galgotia Pub. Pvt. Ltd 2002.
3. A Chitra and P T Rajan, Data Structures, Vijay Nicoles Pvt Ltd, 1st Edition, 2015.
4. Jean-Paul Tremblay, Paul G. Sorenson, An introduction to Data Structures with applications TMH, 2000.

Websites and E-learning Sources :

1. www.tutorialspoint.com/data_structures_algorithms/index.htm
2. <http://www.elearningsites.net/>
3. <http://elearning.vtu.ac.in/>
4. www.cplusplus.com
5. www.learncpp.com
6. www.cs.wustl.edu
7. www.codersource.net

QUESTION PAPER TEMPLATE:

Time : 3 Hours
Maximum Marks : 100

SECTION A [10 X 2 = 20]: Answer all 10 questions
[At least two from each unit]

SECTION B [5 X 8 = 40]: Answer 5 questions out of 7 questions
[At least one from each unit]

SECTION C [2 X 20 = 40]: Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER: II

Subject : Practical II – C++ and Data Structures Laboratory

Subject code: CA18/2C/PR2

Teaching hours : 75 hrs.

Credits: 2 L T P : 0-0-5

1. Objects, classes.
2. Inheritance
3. Polymorphism.
4. Operator overloading.
5. Data type conversion.
6. Constructors, Pointers.
7. Virtual functions.
8. Friend Functions.
9. STACK implementation
10. QUEUE implementation
11. SINGLY LINKED LIST implementation
12. DOUBLY LINKED LIST implementation
13. TREE TRAVERSAL implementation

PRACTICAL QUESTION PAPER PATTERN :

Time : 3 Hours

Maximum Marks :60

The External Examiner will prepare the questions on the spot with the help of the question bank.

SEMESTER: III

Subject: Core – Computer Graphics

Subject code: CA18/3C/CCG

Teaching hours: 60 hrs.

Credits: 3 L T P: 3-1-0

Objectives:

- To study the graphics techniques
- To learn the graphics algorithms
- To enable the students and develop their creativity.

Course Outline:

Unit - I:

Introduction to computer Graphics - Video display devices- Raster scan Systems -Random Scan Systems - Interactive input devices - Hard copy devices - Graphics software - Output primitives - line drawing algorithms - initializing lines - line function - circle Generating algorithms. [10 hrs]

Unit - II

Attributes of output Primitives - line attributes - Color and Grayscale style - Area filling algorithms - Character attributes inquiry functions - Two dimensional transformation - Basic transformation - Composite transformation - Matrix representation - other transformations. [15 hrs]

Unit - III

Two - dimensional viewing - window- to view port co-ordinate transformation - clipping algorithms - Interactive input methods - Physical input devices - logical classification of input devices - Interactive picture construction methods. [10 hrs]

Unit - IV

Three - dimensional concepts - Three dimensional display methods - parallel Projection - Perspective Projection - Depth Cueing - Visible line and surface identification - Three dimensional transformation. [15 hrs]

Unit - V

Three dimensional viewing - Projection - Viewing transformation - implementation of viewing operations - Hidden surface and Hidden line removal - backface removals. [10 hrs]

Books Recommended:

1. D.Hearn and M.P.Baker - Computer Graphics - Prentice Hall of India - 1997.

Books for Reference :

1. W.M. Newman and RF.Sproull - Principles of Interactive Computer Graphics - McGraw Hill International Edition - 1979.

ONLINE SOURCES:

1. http://www.tutorialspoint.com/computer_graphics/
2. <http://www.ddegjust.ac.in/>
3. www.rw-designer.com

QUESTION PAPER TEMPLATE:

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20]: Answer all 10 questions

[At least two from each unit]

SECTION B [5 X 8 = 40] : Answer 5 questions out of 7 questions

[At least one from each unit]

SECTION C [2 X 20 = 40] : Answer any 2 questions out of 4 questions

[Not more than one from each unit]

SEMESTER : III

Subject : Core – Visual Programming

Subject code : CA18/3C/CVP

Teaching hours : 60 hrs.

Credits: 3 L T P : 3-1-0

Objective:

- To inculcate knowledge on visual Programming concepts.
- To introduce the student the GUI concepts
- To make them write application programs with database connectivity.

Major Topics covered in the course :

Unit - I

Customizing a Form - Writing Simple Programs - Toolbox - Creating Controls - Name Property - Command Button - Access Keys - Image Controls - Text Boxes - Labels - Message Boxes - Grid - Editing Tools - Variables - Data Types - String - Numbers. [15 hrs]

Unit - II

Displaying Information - Determinate Loops - Indeterminate Loops - Conditionals - Built-in Functions - Functions and Procedures. [10 hrs]

Unit - III

Lists - Arrays – Sorting and Searching - Records - Control Arrays – List and Combo Boxes - Flex Grid Control - Projects with Multiple forms - Do Events and Sub Main - Error Trapping. [10 hrs]

Unit - IV

VB Objects – Common Dialog Boxes - Common Controls - Menus - MDI Forms - Testing, Debugging and Optimization. [10 hrs]

Unit - V

Monitoring Mouse activity- File Handling – Sequential Files – Random Access Files – Binary Files - File System Controls - File System Objects - COM/OLE – OLE automation - DLL Servers - OLE Drag and Drop. [15 hrs]

Recommended Text Books

1. Gary Cornell - Visual Basic 6 from the Ground up - Tata McGraw Hill - 1999.

References :

1. Noel Jerke - Visual Basic 6 [The Complete Reference] - Tata McGraw Hill - 1999.

Online Sources:

1. www.vbtutor.net/vbtutor.html
2. www.freetutes.com/learn-vb6
3. www.thecodingguys.net/tutorials/visualbasic

QUESTION PAPER PATTERN

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] :

Answer all 10 questions

[at least two from each unit]

SECTION B [5 X 8 = 40] :

Answer 5 questions out of 7 questions

[at least one from each unit]

SECTION C [2 X 20 = 40] :

Answer any 2 questions out of 4 questions

[Not more than one from each unit]

SEMESTER: III

Subject : Core – RDBMS and Oracle

Subject code : CA18/3C/RAO

Teaching hours : 60 hrs.

Credits: 3 L T P : 3-1-0

Objective:

- To inculcate knowledge on RDBMS concepts
- To learn the concept of SQL Queries
- To learn the concept of PL/SQL Blocks

Course outline :

Unit - I:

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – Denormalization. [10 hrs]

Unit - II:

Oracle9i: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types. [15 hrs]

Unit - III:

Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions – Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations. [15 hrs]

Unit - IV:

PL/SQL: A Programming Language: History – Fundamentals – Block Structure - Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT...FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions. [10 hrs]

Unit - V:

PL/SQL Composite Data Types: Records – Tables – arrays. Named Blocks: Procedures – Functions – Packages – Triggers – Data Dictionary Views. [10 hrs.]

Books Recommended:

1. Database Systems Using ORACLE – Nilesh Shah, 2nd edition, PHI, 2009.
2. Database Management systems – Arun Majumdar & Pritimoy Bhattacharya, TMH, 2007.

Book for Reference :

1. Database Management System – Gerald V. Post, 6th Edition, TMH, 2013.

Online resources :

1. www.smart-soft.co.uk/Oracle/oracle-tutorial.html
2. www.oracle-dba-online.com/sql/oracle_sql_tutorial.html
3. www.javatpoint.com/oracle-tutorial
4. www.tutorialspoint.com/dbms/index.html

QUESTION PAPER TEMPLATE

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] :

Answer ALL 10 questions

[at least two from each unit]

SECTION B [5 X 8 = 40] :

Answer 5 questions out of 7 questions

[at least one from each unit]

SECTION C [2 X 20 = 40] :

Answer any 2 questions out 4 of questions

[Not more than one from each unit]

SEMESTER : III

Subject : Allied – Financial Accounting

Subject code : CA18/3A/CFA

Teaching hours : 90 hrs.

Credits: 5 L T P : 5-1-0

Objective:

- To inculcate basic accounting knowledge.
- To learn to prepare the Final Account.
- To study the concept of depreciation.

Major Topics covered in the course :

Unit - I:

Introduction to Accounting: Definition - Attributes and Steps of Accounting -Objectives, Advantages and Limitations - Groups interested in Accounting Information - Branches of Accounting - Methods of Accounting - Types of Accounts-Accounting Rules. Basic Accounting Concepts and Conventions - Accounting Equation. [15 hours]

Unit - II:

Journal – Transaction analysis for Journal Entries – Ledger – Account – Posting of Journal to Ledger – Balancing of Ledger Accounts – Cash Book – Simple Cash book – Two column cash book with cash and discount columns – Two column cash book with bank and discount columns – Three column cash book. [15 hours]

Unit - III :

Trial balance – Rectification of Errors – Suspense Account – Bank Reconciliation Statement. [20 hours]

Unit IV:

Final Accounts: Trading Account – Profit and Loss Account – Balance Sheet – Adjustments. [20 hours]

Unit - V:

Depreciation Accounting: Meaning – Characteristics – Causes – Methods of recording Depreciation – Methods of providing depreciation – Fixed percentage on original cost – Fixed percentage on diminishing balance [including change in the method of depreciation]. [20 hours]

Books Recommended:

1. T.S. Reddy, A. Murthy Financial Accounting, Margham Publications, 2012.

Books for Reference :

1. Gupta R.L. Advanced Accountancy, S.Chand, Delhi, 2004.
2. Agarwala A. N. Higher Science of Accountancy, Kitab Mahal,Allahabad, 2015.
3. S.P. Jain, and K.L. Narang, Financial Accounting, Kalyani publisher, 2012

Online Sources :

1. www.tutorialspoint.com/financial_accounting
2. www.accountingverse.com/financial_accounting

QUESTION PAPER TEMPLATE

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] :

Answer ALL 10 questions.

[at least two from each unit]

SECTION B [5 X 8 = 40] :

Answer any 5 questions out of 7 questions

[at least one from each unit]

SECTION C [2 X 20 = 40] :

Answer any 2 questions out of 4 questions

[Not more than one from each unit]

SEMESTER : III

Subject : Practical III – VB and ORACLE Laboratory

Subject code : CA18/3C/PR3

Teaching hours : 75 hrs.

Credits: 3 L T P : 0-0-4

Creation of a Database and performing the operations given below using a Menu Driven Program.

- a] Insertion
- b] Deletion
- c] Modification
- d] Generating a Simple report

1. Payroll
2. Mark sheet Processing
3. Invoice system
4. Library information system
5. Student information system
6. Income tax processing system

PRACTICAL QUESTION PAPER PATTERN :

Time : 3 Hours

Maximum Marks : 60

The External Examiner will prepare the questions on the spot with the help of the question bank.

SEMESTER: III

SUBJECT: Practical IV - Computer Graphics using C Laboratory

SUBJECT CODE : CA18/3C/PR4

Teaching Hours: 45 hrs.

Credits: 2 L T P: 0-0-3

1. Implementation of Bresenham's Algorithm – Line, Circle.
2. Two Dimensional transformations - Translation, Rotation, Scaling, Reflection
3. Composite 2D Transformations
4. Cohen Sutherland 2D line clipping.
5. Three dimensional transformations - Translation, Rotation, Scaling
6. Composite 3D transformations
7. Drawing an Image using Geometric Function.

PRACTICAL QUESTION PAPER TEMPLATE:

Time : 3 Hours

Maximum Marks : 60

The External Examiner will prepare the questions on the spot with the help of the question bank.

SEMESTER : IV

Subject : Core – Programming in Java

Subject code : CA18/4C/PJP

Teaching hours : 60 hrs.

Credits: 3 L T P : 3-1-0

Objective:

- To inculcate knowledge on Java Programming concepts.
- To make the students to write their own java application programs.
- To make them understand and use advanced java concepts.

Course Outline:

Unit-I:

The Genesis of Java: Java's Lineage – Creation of Java – why java is important – Java's Magic – The Java Buzzwords. Overview of Java: OOP – A First simple program - Data Types, Variables, Arrays. Operators: Arithmetic Operators – Bitwise Operators – Relational Operators – Boolean logical Operators – Assignment Operators – The ? operator – Operator Precedence. Control statements: Selection Statements – Iteration Statements – Jumps Statements. [10 Hrs]

Unit-II:

Introducing Classes: Class fundamentals – declaring Objects - Methods – Constructors – The finalize() method. Method and Classes. Inheritance: Basics – using super – creating multi level hierarchy – Method overriding – Dynamic methods dispatch – using abstract classes – using final with inheritance – The object class. Packages and Interfaces: Packages- Access production – Importing packages – Interfaces. [10 Hrs]

Unit-III:

Exception Handling: Fundamentals - Types – Uncaught exception – using try and catch - throw – throws – finally – Built in exception - Own exception sub classes. Multithreaded Programming: Thread model – Main Thread – Creating a Thread - Creating multiple threads – using isAlive() and join() – Thread priorities – Suspending, Resuming and Stopping threads. String Handling – Simple type Wrappers. [10 Hrs]

Unit-IV:

I/O, Applets and other topics: I/O Basics - Stream Classes – Byte Stream – Character Stream – Reading Console Input – Writing Console Output – Print Writer Class – Reading and writing Files [15 Hrs]

Unit-V:

The Applet Class: Basics – Applet Architecture – Applet Skeleton - Display methods – Repainting – Using the Status Window – HTML applet tag – passing parameters. Event Handling: Event handling mechanisms – the delegation event model – event class – event listener interfaces. Java Beans: Java Bean – Advantages – Bean Developer Kit – JAR Files – Developing Simple Bean – A Tour of Swing [15 Hrs]

Books Recommended:

1. The Complete Reference JAVA 2 - Hebert Schildt, 5th Edition, TMH,2010

Books for Reference :

1. Programming with JAVA – A Primer - E. Balagurusamy, 3rd Edition, TMH., 2012
2. Programming with JAVA – John R. Hubbard, 2nd Edition, TMH.2004.

ONLINE SOURCES :

1. www.javatpoint.com
2. www.udemy.com/java-tutoria
3. <https://beginnersbook.com/java-tutorial-for-beginners-with-examples>

QUESTION PAPER TEMPLATE:

Time	:	3 Hours
Maximum Marks	:	100
SECTION A [10 X 2 = 20]	:	Answer ALL questions. [at least two from each unit]
SECTION B [5 X 8 = 40]	:	Answer 5 questions out of 7 questions [at least one from each unit]
SECTION C [2 X 20 = 40] :	:	Answer any 2 questions out of 4 questions [Not more than one from each unit]

SEMESTER: IV

Subject : Core – OPERATING SYSTEM

Subject code : CA18/4C/COS

Teaching Hours : 60 Hrs

Credits : 3 L T P : 3 - 1 - 0

Objective:

- To inculcate knowledge about OS concepts.
- To make the students understand concepts like deadlock, process synchronization..
- To make them understand memory management and file structure concepts.

Unit I

Introduction: Views- Goals - Types of System- OS Structure - Components – Services. Process Concept – Process Scheduling – Operation on Processes – Cooperating Processes – Inter process Communication – Basic Concepts of CPU Scheduling – Scheduling Criteria – Scheduling Algorithms. [10 hrs]

Unit II

Process Synchronization – The Critical Section Problem – Synchronization Hardware –Semaphores – Classic Problems of Synchronization – Deadlock Characterization – Methods for handling deadlocks-Deadlock Prevention – Deadlock Avoidance –Deadlock Detection – Recovery from deadlock. [10 hrs]

Unit III

Memory Management: Address Binding – Dynamic Loading and Linking – Overlays –Logical and Physical Address Space – Contiguous Allocation - Internal and External Fragmentation. Non –Contiguous Allocation: Paging and Segmentation Schemes – Implementation –Hardware –Protection – Sharing – Fragmentation. [10 hrs]

Unit IV

Introduction to Virtual Memory – Demand Paging – Process Creation – Page Replacement – Allocation of Frames – Thrashing. [15 hrs]

Unit V

File-System Structure – File-System Implementation – Directory Implementation – Allocation Methods – Free-Space Management – Efficiency and Performance – Recovery – Log-Structured File System - Disk Structure – Disk Scheduling –Disk Management – Swap- space Management. [15 hrs]

Books Recommended:

1. Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, *Operating System Concepts*, Sixth Edition, John Wiley and Sons, 2002.

Books for Reference:

1. Stallings , Operating system , Pearson education , edition 4 ,2001
2. Godbole Kahate , Operating system , Tata Mc Graw hill , 2000

Online sources:

1. <https://codescracker.com/operating-system>
2. www.tutorialspoint.com

QUESTION PAPER TEMPLATE

Time : 3 Hours
Maximum Marks : 100

- SECTION A [10 X 2 = 20] : Answer ALL 10 questions.
[at least two from each unit]
- SECTION B [5 X 8 = 40] : Answer any 5 questions out of 7 questions
[at least one from each unit]
- SECTION C [2 X 20 = 40] : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER : IV

Subject : Core – Computer System Architecture

Subject code : CA18/4C/CSA

Teaching hours : 60 hrs.

Credits: 3 L T P : 3-1-0

Objective :

- To study the various representations of data, register transfer language for micro- operations and organization and design of a digital computer.
- To teach the concept of micro-programmed control unit, the central processing unit, stack and instruction formats.
- To Study the various arithmetic operation's algorithms and their hardware implementations and concept of pipelining and vector processing.

Unit I :

Register transfer and micro operations: Register transfer language, register transfer, bus and memory transfers, arithmetic micro-operations, logic micro-operations, shift micro-operations, arithmetic logic shift unit. Basic computer organization and design: Instruction codes, computer registers, computer instructions, timing and control, instruction cycle, memory reference instructions, input-output and interrupt. [10 hrs]

Unit : II :

Central processing unit: General register organization, stack organization, instruction formats, addressing modes, data transfer and manipulation, program control. [10 hrs]

Unit III :

Pipeline and vector processing: Parallel processing, pipelining, arithmetic pipeline, instruction pipeline, RISC pipeline, vector processing array processors. [10 hrs]

Unit IV :

Input-output organization: Peripheral devices, input-output interface, asynchronous data transfer, modes of transfer, priority interrupt, direct memory access, input-output processor, serial communication. [15 hrs]

Unit V : (MOOC – NPTEL)

Memory organization: Memory hierarchy, main memory, auxiliary memory, associative memory, cache memory, virtual memory, memory management hardware. [15 hrs]

Recommended Text Books :

1. Morris Mano, 'Computer System Architecture', 3rd Edition, Pearson Education, 2002 / PHI.

References :

1. Vincent P. Heuring and Harry F. Jordan, 'Computer Systems Design and Architecture', Pearson Education Asia Publications, 2002.

2. John P.Hayes, 'Computer Architecture and Organization', Tata McGraw Hill,1988.
3. Andrew S.Tanenbaum, 'Structured Computer Organization', 4th Edition, Prentice Hall of India/Pearson Education, 2002.
4. William Stallings, 'Computer Organization and Architecture', 6th Edition, Prentice Hall of India/Pearson Education, 2003

Online Sources :

1. www.freebookcentre.net
2. williamstallings.com
3. www.cs.iastate.edu

QUESTION PAPER PATTERN

Time	: 3 Hours
Maximum Marks	: 100
SECTION A [10 X 2 = 20]	: Answer ALL questions. [at least two from each unit]
SECTION B [5 X 8 = 40]	: Answer 5 questions out of 7 questions [at least one from each unit]
SECTION C [2 X 20 = 40]	:Answer any 2 questions out of 4 questions [Not more than one from each unit]

SEMESTER : IV

Subject : Allied – Management Accounting

Subject code : CA18/4A/CMA

Teaching hours : 90 hrs.

Credits: 5 L T P : 5-1-0

Objective:

- To impart education to students about the principles and practices followed in the field of management accounting.
- To familiarize students with tools.
- To develop skills of decision making in management accounts for efficient management

Major Topics covered in the course :

Unit I :

Management accounting – Meaning, Scope, Importance and Limitations – Management accounting Vs Cost accounting – Management accounting vs. Financial accounting. [15 hours]

Unit II :

Funds flow and Cash flow statements as per AS3. [20 hours]

Unit III :

Ratio analysis – Advantages and Disadvantages - Classification of ratios: Profitability, Turnover, Coverage and Financial –DU PONT Control Chart [Theory]. [20 hours]

Unit IV :

Budgets and budgetary control – Meaning – Advantages – Limitations – Installation of Budgetary control system – Classification of Budgets based in time, functions and flexibility-Sales budget, Production budget, Cost of Production budget, Cash budget and Flexible budget. [Simple problems only] [20 hours]

Unit V :

Standard costing and Variance analysis – meaning of Standard cost – significance of variance analysis – analysis of cost variances – material , labour variances. [15 hours]

Books Recommended:

1. Dr.S.N.Maheswari , Management accounting , Sultan Chand & Sons, New Delhi,2005.

Books for Reference :

1. Sumit Jain , Management accounting, Taxman publications , New Delhi,2008
2. Reddy,Murthy,Management accounting , Margam publications,Chennai,2005

Online Sources :

1. www.wiziq.com/management-accounting
2. www.dailymotion.com/video/x20ep75
3. www.tutorialspoint.com › [Accounting Basics](#) › [Management A/c](#)

QUESTION PAPER TEMPLATE

Time : 3 Hours

Maximum Marks : 100

- SECTION A [10 X 2 = 20] : Answer ALL 10 questions.
[at least two from each unit]
- SECTION B [5 X 8 = 40] : Answer any 5 questions out of 7 questions
[at least one from each unit]
- SECTION C [2 X 20 = 40] : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER : IV

Subject : Practical V – Java Laboratory

Subject code : CA18/4C/PR5

Teaching hours : 75 hrs.

Credits: 3 L T P : 0-0-3

1. Classes and objects
2. Arrays
3. Vectors
4. Thread
5. Exception handling
6. Inheritance
7. Interfaces
8. Packages
9. Applet Program
10. Event Handling
11. File Handling
12. JDBC
13. Java Beans Components
14. Swing Components

PRACTICAL QUESTION PAPER TEMPLATE :

Time : 3 Hours
Maximum Marks : 60

The External Examiner will prepare the questions on the spot with the help of the question bank.

SEMESTER : IV

Subject : Term Paper and Seminar

Subject code : CA18/4C/PO1

Teaching hours : 45 hrs.

Credits: 2 L T P : 0-0-3

Objective:

To inculcate knowledge about how to prepare a term paper and to present it.

Major Topics covered in the course :

Any Computer related topic should be chosen as a term paper and it should be presented as a Seminar at the end of the semester.

Presentation/ Viva –Voce Template :

Maximum Marks : 60

SEMESTER : V

Subject: Core – Dot Net Technologies

Subject code: CA18/5C/DNT

Teaching hours: 75 hrs.

Credits: 4

L T P: 3-2-0

Objective:

- To understand the fundamentals of developing modular application by using object oriented methodologies.
- To design, debug and deploy web applications using VB .NET and ASP .NET.
- To set up and configure programming environment and to develop a data driven web application.

Course Outline:

Unit - I

The Visual Basic .NET Development Environment – Elements of VB.NET – Lexical Elements – Preprocessing Directives – General Concepts – Option, Imports, Namespace Directives – Types – Type Members – Statements and Blocks – Expressions – VB.NET Operators – Conditional Structures and Control flow. [15 Hrs]

Unit - II

Interfacing with End User – Windows Forms – MDI Applications – Components and Controls – Menus and Toolbars – Responding to User Input – Collecting User Input – Presentation and Informational Controls – Drag and Drop operations. [15 Hrs]

Unit - III

ASP.NET Language Structure – HTML Server Controls : HTMLAnchor, HTMLTable, HTMLTableRow, HTMLTableCell, HTMLForm and Form Input Controls – Basic Web Server Controls: Label, TextBox, Button, LinkButton, ImageButton, CheckBox, RadioButton, HyperLink, Image Control – Data List Web Server Controls: CheckBoxList , RadioButtonList, DropDownList, ListBox, DataGrid, Repeater Control – Other Web Server Controls : Calendar , AdRotator and Validation Controls. [15 Hrs]

Unit - IV

IE Web Controls – TreeView Control – Toolbar Control – Tabstrip and Multipage Controls –Request and Response Objects – OleDbConnection Class - OleDbCommand Class - OleDbTransaction Class – OleDbDataAdapterClass – DataSet Class – Sample Applications [15 Hrs]

Unit – V

Advanced Issues – E-Mail : Sending a simple E-mail message – Smtplib and MailMessage classes- Attaching a File – Sending an HTML E-mail message – Application Issues : Maintaining Session State- Maintaining Application State –Application and Session Objects Sample Application –Error Handling: No Error Handling – Resume Next – On Error Goto Handler-Resume from Handler-Try/Catch Code Block- Err Object –Using the CustomErrors Sections of Web.Config. [15 Hrs]

Books Recommended

1. Jeffrey R.Shapiro , The Complete Reference Visual Basic.NET ,Tata McGraw Hill,2002
2. Greg Buczek, ASP.NET Developer's Guide , Tata McGraw Hill,2002

Book for Reference :

1. Bill Evjen, Jason Beres ,Visual Basic .NET Programming Bible ,Wiley ,2002
2. Matthew MacDonald , The Complete Reference ASP.NET ,McGraw-Hill/Osborne,2002
3. William Penberthy ,Beginning ASP.NET for Visual Studio 2015, John Wiley & Sons, 2016.

ONLINE SOURCES :

1. www.tutorialspoint.com/vb.net
2. www.w3schools.com/aspnet
3. www.tutorialspoint.com/asp.net
4. www.asp.net-tutorials.com

QUESTION PAPER TEMPLATE:

Time : 3 Hours

Maximum Marks : 100

- SECTION A (10 X 2 = 20) : Answer All 10 questions
[at least two from each unit]
- SECTION B (5 X 8 = 40) : Answer 5 questions out of 7 questions
[at least one from each unit]
- SECTION C (2 X 20 = 40) : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER: V

SUBJECT: CORE-SOFTWARE ENGINEERING

SUBJECT CODE: CA18/5C/CSE

Teaching hours: 75 hrs.

Credits: 4 L T P : 3-2-0

Objective:

- Helps students to develop of software.
- To acquire knowledge regarding the development of a software system.
- Case study can be carried out during the course.

Major Topics covered in the course :

Unit-I:

Introduction to Software Engineering: The evolving role of software, Changing Nature of Software, Software myths. A Generic view of process: Software engineering- A layered technology, a process framework, The Capability Maturity Model Integration (CMMI), Process patterns, process assessment, personal and team process models.

Unit-II:

Process models: The waterfall model, Incremental process models, Evolutionary process models, The Unified process. Software Requirements: Functional and non-functional requirements, User requirements, System requirements, Interface specification, the software requirements document.

Unit-III:

Requirements engineering process: Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System models: Context Models, Behavioral models, Data models, Object models, structured methods.

Unit-IV:

Design Engineering: Design process and Design quality, Design concepts, the design model. Creating an architectural design: software architecture , Data design, Architectural styles and patterns, Architectural Design.

Unit-V:

Testing Strategies: A strategic approach to software testing , test strategies for conventional software, Black-Box and White-Box testing, Validation testing, System testing, the art of Debugging. Product metrics: Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for source code, Metrics for testing, Metrics for maintenance. Quality Management: Quality concepts, Software quality assurance, Software Reviews, Formal technical reviews, Statistical Software quality Assurance, Software reliability.

Recommended Text Books :

1. Software Engineering, A practitioner's Approach- Roger S. Pressman, 6th edition. McGrawHill International Edition, 2008

References :

1. Software Engineering- Sommerville, 7th edition, Pearson education,2004
2. Software Engineering- K.K. Agarwal & Yogesh Singh,New Age International Publishers, 2007.

Websites and E-learning Sources :

1. www.tutorialized.com
2. www.webopedia.com
3. www.forumstutorialized.com

QUESTION PAPER TEMPLATE:

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20]: Answer all 10 questions

[At least two from each unit]

SECTION B [5 X 8 = 40]: Answer 5 questions out of 7 questions

[At least one from each unit]

SECTION C [2 X 20 = 40]: Answer any 2 questions out of 4 questions

[Not more than one from each unit]

SEMESTER : V

Subject : Core - Web Technology

Subject Code : CA18/5C/WEB

Teaching Hours : 75 Hrs

Credits:4 L T P : 3-2-0

Objective:

- To inculcate knowledge on designing webpage using HTML, DHTML
- To make the students learn JavaScript and PHP
- To Introduce students to Python language

Course Outline:

Unit - I

Internet Basic - Introduction to HTML – Adding Graphics to HTML Doc - List - Creating Table - Linking document - Frames –**Dynamic HTML:** Cascading Style sheets - Style sheet basic - Add style to document – Font Attributes, Color and Background Attributes, Text Attributes, Border Attributes, Class, External Style sheets,<DIV>....</DIV> Tag - Introduction to JavaScript: Advantage of JavaScript - JavaScript Syntax – Data types - Variable - Array - Operator and Expression – Conditional Checking- Looping [15 hrs]

Unit - II

Constructor - Function – User defined functions-Dialog box. JavaScript document object model - Introduction - Object in HTML –Browser Objects - Event Handling - Form Object - Built in Object - User defined object – Cookies- Introduction to jQuery : Selectors and methods – Events and functions – Web page manipulation – Effects and Animation. [15 hrs]

Unit - III

PHP : Basics of PHP Scripts-Flow Control Functions-Working with Functions –Working with Strings,Dates and Time. [15 hrs]

Unit – IV

Working with Forms, Cookies and Sessions – PHP and MySQL Integration: Learning Basic SQL Commands-Interacting with MySQL Using PHP. [15 hrs]

Unit –V

Python : Data types : Boolean – numbers – list – tuple – set – dictionaries. Strings : formatting strings – other common methods. Regular expressions. Closure and generators : List of functions – list of patterns – file of patterns – generators. Functions : Defining - calling – types. Input/Output : Printing on screen – reading a data from keyboard – opening and closing a file – reading and writing a file- file functions.

[15 hrs]

Recommended Text Books:

1. Ivan Bayross, Web Enable Commercial Application Development Using HTML, Javascript, DHTML and PHP, 4th Revised Edition 2010
2. Benedetti, Ryan, and Ronan Cranley. Head First JQuery: A Brain-Friendly Guide. " O'Reilly Media, Inc.", 2011.
3. Julie C. Meloni, Sams Teach Yourself, PHP, MySQL and Apache, 5th Edition, Pearson, 2012
4. Mark Pilgrim, Dive into Python , Createspace publisher , 2009

References :

1. J. Jaworski, Mastering Javascript, BPB Publications, 1999
2. T. A. Powell, Complete Reference HTML [Third Edition], TMH, 2002
3. C. Xavier , Web Technology & Design, , New Age International Publishers, 2012
4. Mark Lutz, and David Ascher, Learning Python, 5th edition , O'reilly publication, 1999

Online Sources :

1. www.w3schools.com
2. www.tutorials.com/javascript
3. www.tutorialspoint.com/php/

QUESTION PAPER PATTERN:

Time : 3 Hours
Maximum Marks : 100

- SECTION-A [10 x 2 = 20] : Answer 10 questions out of 12 questions
[at least two from each unit]
- SECTION-B [5 x 8 = 40] : Answer 5 questions out of 7 questions
[at least one from each unit]
- SECTION-C [2x20=40] : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER : V

Subject: Internet of Things

Subject Code: CA18/5E/IOT

Teaching hours: 75 hrs.

Credits: 4. L T P: 3-2-0

Objective :

- To learn the evolution, principles, communications of internet.
- To discover the devices used in IoT.
- Able to realize the revolution of Internet in Sensor Networks

Course Outline:

Unit - I

The Internet of Things: An Overview -The Flavour of the Internet of Things -The “Internet” Of “Things” -The Technology of the Internet of Things -Enchanted Objects -Who is making the Internet of Things? Design Principles for Connected Devices -Calm and Ambient Technology -Magic as Metaphor -Privacy -Keeping Secrets -Who’s Data Is It Anyway? -Web Thinking for Connected Devices -Small Pieces, Loosely Joined -First-Class Citizens on the Internet -Graceful Degradation Affordances [15 Hrs]

Unit – II

Internet Principles -Internet Communications: An Overview –IP-TCP -The IP Protocol Suite (TCP/IP) -UDP -IP Addresses -DNS -Static IP Address Assignment -Dynamic IP Address Assignment -IPv6 MAC Addresses -TCP and UDP Ports -An Example: HTTP Ports -Other Common Ports -Application Layer Protocols -HTTP -HTTPS:Encrypted HTTP -Other Application Layer Protocols [15 Hrs]

Unit – III

Thinking about Prototyping: Sketching -Familiarity -Costs versus Ease of Prototyping - Prototypes and Production -Changing Embedded Platform -Physical Prototypes and Mass Personalization -Climbing into the Cloud -Open Source versus Closed Source -Why Closed? -Why Open? -Mixing Open and Closed Source -Closed Source for Mass Market Projects -Tapping into the Community. [15 Hrs]

Unit – IV

Prototyping Embedded Devices: Electronics -Sensors -Actuators -Scaling Up the Electronics -Embedded Computing Basics -Microcontrollers -System-on-Chips -Choosing Your Platform -Arduino -Developing on the Arduino -Some Notes on the Hardware -Openness -Raspberry Pi -Cases and Extension Boards -Developing on the Raspberry Pi -Some Notes on the Hardware –Openness [15 Hrs]

Unit – V

Prototyping the Physical Design: Preparation -Sketch, Iterate, and Explore -Nondigital Methods -Laser Cutting -Choosing a Laser Cutter -Software -Hinges and Joints -3D Printing -Types of 3D Printing - Software -CNC Milling -Repurposing/Recycling [15 Hrs]

Books Recommended

1. Adrian McEwen and Hakim Cassimally, “Designing the Internet of Things”, John Wiley and Sons, Ltd. 2014 Edition

Books for Reference :

1. Arshdeep Bahga, Vijay Madiseti, “Internet of things: A Hands on Approach”, Arshdeep Bahga, Vijay Madiseti, 2014 Edition.
2. Marco Schwartz, “Internet of Things with the Arduino Yún”, Packt Publishing, 2014.
3. David Boswarthick, Olivier Hersent, Omar Elloumi, “The Internet of Things: Key Applications and Protocols”, Wiley Publication, 2015.
4. James Weaver, Stephen Chin, “Raspberry Pi with Java: Programming the Internet of Things (IoT)”, McGraw-Hill, 2015

Online Sources:

1. https://www.tutorialspoint.com/internet_of_things
2. <http://www.steves-internet-guide.com/internet-of-things>
3. <https://www.coursera.org/specializations/iot>

QUESTION PAPER TEMPLATE:

Time : 3 Hours
Maximum Marks : 100

SECTION-A [10 x 2 = 20] : Answer all 10 questions
[at least two from each unit]

SECTION-B [5 x 8 = 40] : Answer 5 questions out of 7 questions
[at least one from each unit]

SECTION-C [2x20=40] : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER : V

Subject: Practical VI – Dot Net Laboratory

Subject Code: CA18/5C/PR6

Teaching Hours: 75 Hrs

Credits: 3

L T P: 0-0-5

Visual Basic .NET

1. Menus and Toolbars.
2. Working with Arrays
3. Working with User Input Controls
 - a. Buttons
 - b. Text Boxes
 - c. Check Boxes
 - d. Radio Buttons
 - e. Combo Boxes
4. Working with MDI Applications
5. Drag and Drop operations.
6. VB .Net with database access.

ASP.NET

1. Working with basic web server controls
2. Working with data list web server controls.
3. Calendar and Ad Rotator Controls
4. Validation Controls.
5. Working with Database Connectivity

PRACTICAL QUESTION PAPER PATTERN:

Time : 3 Hrs

Maximum Marks : 100

The External Examiner will prepare the questions on the spot with the help of the question bank supplied by the Controller's Office

SEMESTER : V

Subject: Practical VII - Web Technology Laboratory

Subject Code: CA18/5C/PR7

Teaching Hours: 75 Hrs

Credits: 3 L T P: 0-0-5

Web Technologies

Creation of web pages using:

1. HTML with CSS
2. Javascript
3. PHP
4. PHP and MySQL
5. Python

PRACTICAL QUESTION PAPER PATTERN:

Time : 3 Hrs

Maximum Marks : 60

The External Examiner will prepare the questions on the spot with the help of the question bank.

SEMESTER : VI

Subject : Core – Data Communications and Networking

Subject code : CA18/6C/DCN

Teaching hours : 75 hrs.

Credits: 4 L T P : 3-2-0

Objective:

- To inculcate knowledge on Networking concepts
- To make students aware of technologies like OSI , ATM and ISDN.
- To introduce students to internetworking devices.

Major Topics covered in the course :

Unit - I

Introduction to Data Communication, Network Protocols & standards - Line Configuration - Topology - Transmission mode - Classification of Network. OSI Model : Layers of OSI Model. [15 hrs]

Unit - II

Digital data transmission - DTE/DCE interface – Modems. Transmission media : Guided Media - Unguided Media – Transmission impairment – Performance. Error Detection and Error Correction: types of errors – detection – VRC – LRC – CRC – checksum – error correction. [15 hrs]

Unit - III

Multiplexing : FDM – WDM – TDM . LAN : Ethernet - Token Bus - Token Ring – FDDI. SWITCHING : Circuit Switching - Packet Switching - Message switching. [15 hrs]

Unit - IV

ISDN : History – Subscriber Access to ISDN - ISDN Layers - Broadband ISDN. ATM: Design goals - ATM Architecture – Switching - ATM layers. [15 hrs]

Unit - V

Networking and internetworking devices : Repeaters - Bridges - Routers - Gateway - Routing algorithms. TCP/IP: overview – Network layer – addressing – sub netting – other protocols in the network layer – transport layer – Domain name system – TELNET- FTP – TFTP – SMTP - SNMP – HTTP - World Wide Web. [15 hrs]

Book Recommended:

1. Behrouz and Forouzan - Introduction to Data Communication and Networking - 2nd Edition - TMH-2001

Reference Books:

1. Jean Wairand - Communication Networks [A first Course] - Second Edition - WCB/McGraw Hill - 1998.

Online Sources :

1. www.networktutorials.info
2. www.intelligentedu.com
3. www.webopedia.com

QUESTION PAPER PATTERN:

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] :

Answer ALL questions

[at least two from each unit]

SECTION B [5 X 8 = 40] :

Answer 5 questions out of 7 questions

[at least one from each unit]

SECTION C [2 X 20 = 40] :

Answer any 2 questions out of 4 questions

[Not more than one from each unit]

SEMESTER – VI

Subject: Core – Cloud Computing

Subject code: CA18/6C/CCC

Teaching hours: 75 hrs

Credits: 4 L T P: 3 – 2 – 0

Objectives:

- To make the students know the fundamentals and essentials of Cloud Computing
- To make the students to gain an overview of the future of cloud computing.
- Students have a sound foundation of the cloud computing so that they can start using and adopting Cloud Computing services and tools in their real life scenarios.

Course Outline:

Unit I:

Defining Cloud Computing – Cloud Types – The NIST model – The Cloud cube model – Deployment model – Service models –Examining the Characteristics of Cloud Computing: Paradigm Shift – Benefits of cloud computing – Disadvantages of cloud computing – Assessing the Value Proposition : The laws of clouconomics – Cloud computing obstacles- Measuring cloud computing costs. [15Hrs]

Unit II:

Understanding Services and Applications by Type: Defining Infrastructure as a Service (IaaS) – Defining Platform as a Service (Paas) – Defining Software as a Service (SaaS) – Defining Identity as a Service (IDaaS) - Defining Compliance as a Service (CaaS). [15Hrs]

Unit – III (MOOC – NPTEL)

Cloud Computing Architecture – Cloud computing virtualization – Cloud Computing XML Basics – Introduction to MapReduce . [15Hrs]

Unit – IV

Understanding Cloud Security : Securing the cloud – The security boundary – Security service boundary – Security mapping – Securing Data – Brokered cloud storage access –Storage location and tenancy – Encryption–Auditing and compliance. [15 Hrs]

Unit – V

Moving Applications to the cloud: Applications in the clouds – Functionality mapping – Application attributes – Cloud service attributes – System abstraction – Cloud bursting – Applications and Cloud APIs. [15 Hrs]

Books Recommended:

1. Barrie Sosinsky, Cloud Computing Bible, John Wiley & Sons, 2011.
2. Jochen Schiller, “Mobile Communications”, 2nd ed., Pearson Education, 2003.

Books for Reference :

1. Michael Miller, Cloud Computing : Web-Based Applications That Change the Way You Work and Collaborate Online , Pearson Publications, 2008
2. Bernard Golden ,AWS for Dummies, John Wiley & Sons Inc., 2013
3. Uwe Hansmann, Lothar Merk, Martin S.Nicklons and Thomas Stober, “Principles of Mobile Computing, 2nd ed., Springer International, 2007

Online Sources

1. https://www.tutorialspoint.com/cloud_computing
2. https://www.tutorialspoint.com/mobile_computing

QUESTION PAPER TEMPLATE

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] : Answer ALL 10 questions.
[at least two from each unit]

SECTION B [5 X 8 = 40] : Answer any 5 questions out of 7 questions
[at least one from each unit]

SECTION C [2 X 20 = 40] : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER : VI

Subject : Core - Multimedia

Subject code : CA18/6C/CMM

Teaching hours : 75 hrs.

Credits: 4

L T P : 3-2-0

Objective:

- The subject will be helpful in understanding basic characteristics of various media's like audio and video etc.
- It will extensively cover all aspect of Multimedia Application development like audio/video compression, animation and user interface development.
- Also the various tools for image manipulation and creating animation will be covered.

Course Outline :

Unit – I:

PhotoShop : Photoshop's Environment - Raster and Vector Graphics – File Formats -Various pros, cons, and uses of common file formats - How to open and close files -Pasting images – Basic photo editing tasks: Zooming, Cropping and Straightening, file size reduction, Removing a background and Changing the contrast on part of a picture Sizing images – Working in different Color Modes – Choosing Colors.
[15 hours]

Unit – II:

Image Manipulation in Photoshop : Selecting Image Areas: using Quick selection tool, Magic Wand tool, Shape tools and Lasso tools. – Working with Layers – The Layer Menu and the Layers Panel Menu - Merging and Flattening layers - The Clone Stamp Tool - Modifying Selections Blending and Compositing - Painting Tools · Brightness/Contrast - Red-eye removal and fixing - Hue/Saturation.
[15 hours]

Unit – III:

Flash Basics: The Tools Panel, The Document Window and The Timeline Window - Saving & Uploading Files – Working with Symbols. [15 hours]

Unit – IV:

Basic Drawing Tools – Shape Tools – Pen Tool – Selection Tools - Paint Bucket Tool: fills enclosed areas with colors or gradients – Working with Special Layer Types: Guides and Masks. [15 hours]

Unit - V:

Animation with Flash and Publishing: Basic methods of Flash Animation - Introduction to scripting: Actions and Event Handlers - Publishing your Flash Movies - Publish settings – Publish preview and Publish commands. [15 hours]

Books Recommended:

1. Todd Perkins, Adobe Flash Professional CS5 Bible, Wiley India, 2011.
2. Lisa DaNae Dayly and Brad Dayley, Adobe Photoshop cs5 bible , Wiley India, 2011.

Books for Reference:

1. Adobe flash catalyst cs5 bible, Huddleston
2. Adobe flash cs4 Professional how to 100 essential techniques
3. Adobe Photoshop 6.0 classroom in a book , Adobe
4. Adobe Photoshop cs4 bible , Cates and Abrams Moughamiam
5. Adobe Photoshop cs4 how to 100 essential techniques , Orwing

Online Sources :

1. www.khulsey.com
2. www.w3schools.com
3. www.tutorialized.com

QUESTION PAPER TEMPLATE

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] :

Answer ALL 10 questions.

[at least two from each unit]

SECTION B [5 X 8 = 40] :

Answer any 5 questions out of 7 questions

[at least one from each unit]

SECTION C [2 X 20 = 40] :

Answer any 2 questions out of 4 question

[Not more than one from each unit]

SEMESTER : VI

Subject: Elective II – Data Mining

Subject code: CA18/6E/CDM

Teaching hours: 75 hrs.

Credits: 4

L T P: 3-2-0

Objective:

- To introduce the concept of data mining with in detail coverage of basic tasks, metrics and issues.
- Core topics like classification, clustering and association rules are dealt with.
- To introduce the concept of data warehousing with special emphasis on its implementation and design.

Course Outline:

Unit – I

Introduction - Data Mining applications – Data Mining techniques – Data Mining case studies- The future of data mining – Data Mining software - Association rule mining - Introduction- basics- The task and a naive algorithm- Apriori algorithm – Improving the efficiency of the Apriori algorithm – FP-Growth
[15 Hrs]

Unit – II

Classification - Introduction – Decision Tree – The Tree Induction Algorithm - Over fitting and pruning - DT rules - Estimating predictive accuracy - Other evaluation criteria – Classification software
[15 Hrs]

Unit – III

Cluster analysis - Features – Types of data – Computing distances - Types of cluster analysis methods - partitioned methods – hierarchical methods – density based methods – dealing with large databases – quality and validity – cluster analysis software.
[15 Hrs]

Unit – IV

Web data mining – Introduction - Web terminology and characteristics - locality and hierarchy in the web - web content mining - web usage mining - web structure mining – web mining software [15 Hrs]

Unit – V

Search engines - Search engines functionality- Search engines architecture – Ranking of web pages - Introduction to Data Warehouses – Data Warehouse Design – Guidelines for Data Warehouse implementation - Data Warehouse Metadata
[15 Hrs]

Books Recommended:

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

Book for Reference :

1. Kargupta, Data mining, Prentice hall of India, 2004
2. Jiawei Han and Micheline Kamber ,Data Mining Concepts and Techniques,Second Edition, Elsevier,2000.

Online Sources :

1. https://www.tutorialspoint.com/data_mining/
2. <http://www.zentut.com/data-mining/>

QUESTION PAPER TEMPLATE:

Time : 3 Hours

Maximum Marks : 100

SECTION A [10 X 2 = 20] : Answer ALL 10 Questions
[at least two from each unit]

SECTION B [5 X 8 = 40] : Answer 5 questions out of 7 questions
[at least one from each unit]

SECTION C [2 X 20 = 40] : Answer any 2 questions out of 4 questions
[Not more than one from each unit]

SEMESTER : VI

Subject : Mini Project

Subject code : CA18/6C/PO2

Teaching hours : 75 hrs.

Credits: 4 L T P : 0-0-5

Objective:

- To provide the students with experience in analyzing, designing, implementing and evaluating information systems.
- Students are assigned one or more system development projects.
- The project Development involves part or all of the system development life cycle.
- Hardware Maintenance and Computer Networking based projects can also be undertaken.

Major Topics covered in the course :

Each student will develop and implement individually application software based on any emerging latest technologies.

Project Viva – Voce Template :

Maximum Marks : 60

SEMESTER : VI

Subject : Practical VIII – Multimedia Laboratory

Subject code : CA18/6C/PR8

Teaching hours : 75 hrs.

Credits: 3 L T P : 0-0-5

Photoshop :

1. Create CD cover.
2. Create text and display in various format.[Shadow , Emboss effects]
3. Convert a color picture to black & white image.
4. Modify a picture using selection tools.
5. Given a picture of a flower with a background. Extract the flower and organize on a different background.
6. Given a picture. Adjust the brightness and contrast of the picture to give a better look.
7. Display the given picture through your name using mask.

Flash :

8. Create a motion tween and shape tween.
9. Create an animation to represent a growing moon using frame by frame animation
10. Create an animation to bounce a ball on steps.
11. Simulate movement of a cloud.
12. Draw the blades of a fan and make it work by giving proper animate.
13. Create a guided motion tween.
14. Create a spinning oval.
15. Create a flash application to scroll text with in a text box.
16. Create a fade in , fade out object using flash.
17. Create a zoom animation and ripple effect.
18. Mask a photo
19. Create a button using flash.
20. Create an Action script to execute for a event in a Flash application.

PRACTICAL QUESTION PAPER TEMPLATE :

Time : 3 Hours
Maximum Marks : 60

The External Examiner will prepare the questions on the spot with the help of the question bank.

SEMESTER : I

Subject : NME– Office Automation

Subject code : CA18/1N/COA

Teaching hours : 30 hrs.

Credits: 2

L T P : 0-0-2

Objectives :

- To make the students gain typing knowledge
- To make the students create and print letters and documents.
- To make the student develop power point presentations.

Course Outline:

Unit – I :

Ms-Word :

Introduction - File menu – Cut, Copy and Moving text – Find and Replace - Formatting the document [Font, Paragraph, Bullets & Numbering] - Inserting Page breaks – Page Numbers – Pictures – Header & Footer - Creating Tables. **[10 hrs]**

Unit – II

Ms-Excel :

Introduction – Managing Workbooks –Editing data - Formatting Cells – Insert Row, Column
Creating a table for Payroll program using formulas – Conditional Formatting - Aligning text & Numbers
- Simple Charting - Chart Wizard – Sort Records – Filter. **[10 hrs]**

Unit-III :

Ms-PowerPoint :

Introduction - Create a new presentation using Blank presentation, using Templates, using Auto Content Wizard – Apply Custom animation, Slide Transition - apply Rehearse Timing –Setup Show **[10 hrs]**

Books Recommended:

1. Computer Applications in Business and Management by Ananthi Sheshasaayee and Sheshasaayee – Margham Publications, 7th Edition 2009.

Online Sources:

1. <http://www.laynetworks.com/cs01.htm>
2. <http://computerfundamentals.org/>

QUESTION PAPER TEMPLATE

Practical test for two hours for 50 marks will be conducted at the end of the semester.

SEMESTER : II

Subject : NME – World Wide Web design with HTML

Subject code : CA18/2N/WWH

Teaching hours : 30 hrs.

Credits: 2 L T P : 0-0-2

Objective:

To inculcate knowledge about web designing.

Course Outline:

Unit I :

Introduction to the internet – Internet technologies - Internet browsers - Introduction to HTML – Head and body sections – Designing the body section. [10 hrs]

Unit II :

Ordered and Unordered lists – table handling – DHTML and style sheets. [10 hrs]

Unit III:

Frames – A web page design Project – Forms. [10 hrs]

Books Recommended:

1. World Wide Web Design with HTML, C. Xavier., Tata McGraw Hill, 23rd reprint 2010.
2. A complete guide to internet and web programming, Deven N.Shah, Dreamtech Press, Edition 2009.

Online Sources:

1. www.w3schools.com
2. www.tutorialspoint.com/html/index.html
3. www.simplehtmlguide.com

QUESTION PAPER TEMPLATE

Practical test for two hours for 50 marks will be conducted at the end of the semester