J.J. College of Arts and Science(Autonomous)

J.J.Nagar, Sivapuram Post, Pudukkottai - 622 422

NAAC REACCREDITED WITH 'A' GRADE

PG.D.C.A

Course Structure under Autonomous Status

Under Choice Based Credit System

For the candidates admitted from the academic year 2016 - 2017 onwards

Sem.	Course Title	Hrs / Week	Exam Hrs	Internal	External	Total
I	CC I – Digital Computer Fundamentals	6	3	25	75	100
	CC II – Programming in C	6	3	25	75	100
	CC III- Operating Systems	6	3	25	75	100
	CC IV- C Programming Practical	6	3	40	60	100
	CC V – OS Practical	6	3	40	60	100
	TOTAL	**30**				**500**
II	CC VI – Programming in ASP	6	3	25	75	100
	CC VII – Data Base System	6	3	25	75	100
	CC VIII - Desktop Publishing	6	3	25	75	100
	CC IX – Desktop Publishing Practical	6	3	40	60	100
	CC X – ASP Practical	6	3	40	60	100
	Total	**60**				**1000**

CORE COURSE I – DIGITAL COMPUTER FUNDAMENTALS

Objectives

- **To analyze design, develop, debug and document combinational and sequential digital circuits.**
- **To analyze and design basic central processing units and memory system for general purpose computers.**
- **To analyze and design simple systems composed of programmable logic such as ROMs and PLAs.**

UNIT – I Number Systems and Codes

The Binary Number System – Binary- to- Decimal Conversion –Decimal- to- Binary Conversion – Binary Addition – Binary Subtraction – Binary Multiplication and Division – Octal Numbers – Hexadecimal Numbers – Binary Codes –Error Detecting Codes – Error Correcting Codes.

UNIT – II Logic Gates and Circuits

Boolean Algebra and Logic Gates –AND,OR,NOT, NAND, NOR, and Exclusive OR Gates – Applications of XOR Gate – The Exclusive-NOR Gate – Positive and Negative Logic – Logic Chararcteristics – Bipolar Logic Families – Integrated Circuits – Boolean Algebra: Definitions – Fundamentals of Boolean Algebra – Boolean Functions – Minterms and Maxterms – Laws and Theorems of Boolean Algebra – DeMorgan's Theorem –Universal Building Blocks (UBB) – NAND Gate as UBB – NOR Gate as UBB.

UNIT – III Boolean Algebra

Simplifying Logic Circuits – Sum of Products – AND-OR Networks –Sum of Products and Product of Sums Forms – Karnaugh Maps – Product of Sums Simplification – NAND and NOR Implementation – AND-OR-INVERT Implementation– OR-AND-INVERT Implementation – Don't Care Conditions – Overlapping Groups –Rolling the Map – Eliminating Redundant Groups.

UNIT – IV Combinational Logic Circuits

Introduction – Adders – The Half Adder – The Full Adder– Subtractors – BCD Adder – Multiplexers – Demultiplexers – Decoders – Encoders –Floating Point Number System – Range of Stored Numbers.

UNIT – V Sequential Logic Circuits

Flip Flops – RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – JK Flip Flop – T Flip Flop – Triggering of Flip Flops – Master Slave Flip Flop –Conversion of D Flip Flop – Conversion of T Flip Flop – Transfer Circuit – Clock –Counters and Shift Registers: Counters – Asynchronous or Ripple Counter – Ring Counter – Twisted Ring Counter – State Diagrams and State Tables – Magnitude Comparator – Programmable Arrays of Logic Cells – Shift Register.

Text Book:

1. Principles of Digital Electronics, Dr. K. Meena, PHI Learning Private Limited, New Delhi 2009. [Unit-1 (Chapters - 1) ; Unit-2 (Chapters – 2,chapter 3: 3.1 – 3.9) ; Unit-3 (Chapters 3 : 3.10 – 3.22) ;Unit-4 (Chapters – 4); Unit-5 (Chapters – 5,6)]

Reference Book:

1. Digital Design: M.Morris Mano , Prentice Hall of India.
2. Digital Electronics – William H Gothmann , PHI
3. Digital Fundamentals – Floyd, UBS

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CORE COURSE II - PROGRAMMING IN C

Objectives:

- **To provide a comprehensive study of the C programming language.**
- **To learn and acquire art of computer programming.**
- **To know how to choose programming language for solving a problem**

UNIT – I Introduction to C

Evolution and Application of C – Structure of a C program – Character set – C tokens – constants – variables – Data types – Declaration – Operators – Expression – Type conversion – Data input and output – reading a character – writing a character – formatted input - formatted output.

UNIT – II Control statements and Looping

Decision Making and Branching: Decision making with if statement – the if else statement – nesting of if else statement – the else if ladder – the switch statement – the conditional operator – the goto statement – Decision making and looping: the while statement – the do statement – the for statement – jumps in loops.

UNIT – III Arrays and Strings

Arrays: Declaration and initialization of one dimensional arrays – two dimensional arrays – Multidimensional arrays – dynamic array – REDIM and PRESERVE keywords – **Strings:** Declaring and initializing string variables – reading and writing strings - String handling functions.

Unit IV User defined functions ,Structure and Union

Functions: elements – Definition of function - function declaration – function call - category of function – Recursive functions – Storage classes - **Structures:** definition – declaration – accessing members – **Union**: size of structure.

Unit V Pointers and File Management

Pointers: Pointer declaration – initialization, accessing – pointer expression, **Sequential files:** Defining and opening, closing a file – I/O operations on files.

Text Book:

1. Balagurusamy E, Programming in ANSI C , 4th edition, Tata McGraw-Hill, 2006 (ISBN – 0-07-053477-2)

[Unit-1 (Chapters – 1.1, 1.2, 1.8, 2.2 – 2.8, 3.1 – 3.14, 4.1 – 4.5) ; Unit-2 (Chapters – 5, 6) ; Unit-3 (Chapters – 7,8.1 – 8.8) ; Unit-4 (Chapters – 9.1,9.4 – 9.9, 9.16,9.19, 10.1- 10.4, 10.12, 10.13); Unit-5 (Chapters – 11.1 -11.6 ,11.8, 12.1 - 12.4)]

Reference Book:

1. Byron S Gottfried,"Programming with C", Schaum"s Outline Series – Tata McGraw Hill Publications, New Delhi.

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CORE COURSE III - OPERATING SYSTEM

Objective

- **To understand the underlying principles ,techniques and approaches which constitute a coherent body of knowledge in operating system.**
- **To understand the design issues associated with operating system**
- **To master various process management concepts including scheduling, synchronization and deadlocks.**

UNIT – I Introduction to operating systems

Evolution of operating systems - Functions – Different views of OS – Batch processing, Multiprocessing, Time sharing OS – I / O programming concepts – Interrupt Structure & processing

UNIT – II Memory Management

Memory Management – Single Contiguous Allocation- Partitioned Allocation – Relocatable Partitions allocations – Paged and Demand paged Memory Management – Segmented Memory Management – Segmented and Demand paged Memory Management – overlay Techniques - Swapping

UNIT – III Processor Management

Processor Management – Job Scheduling – Process Scheduling – Functions and Policies – Evolution of Round Robin Multiprogramming Performance – Process Synchronization – Wait and Signal mechanisms – Semaphores P & V Operations – Deadlock – Banker's Algorithm.

UNIT – IV Device Management

Device Management – Techniques for Device Management – I/O Traffic Controller, I/O Scheduler, I/O Device Handlers – Spooling.

UNIT – V File Management

Simple File System, General Model of a File System, Physical and Logical File System. Case Studies: MSDOS, UNIX.

Text Book:

1. Operating Systems – E. Madnick & John J.Donavan, Tata McGraw Hill Publishing Co., Limited. [Unit-1 (Chapters – 1, 2); Unit-2 (Chapters – 3); Unit-3 (Chapters – 4); Unit-4 (Chapters – 5); Unit-5 (Chapters – 6)]

Reference Book:

1. System Programming and Operating Systems – D.M. Dhamdhere, Tata McGraw Hill Publishing Co., Limited.

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CORE COURSE IV – PROGRAMMING IN C PRACTICAL

1. Solution of a Quadratic Equation (all cases).
2. Sum of Series (sine, cosine, exponential).
3. Ascending and descending order of numbers using Arrays (Use it to find Largest and Smallest Numbers).
4. Sorting of names in Alphabetical order.
5. Matrix operations (Addition, Subtraction, Multiplication – using functions.
6. Finding factorials, generating Fibonacci Numbers using recursive functions.
7. String manipulations using string functions (string length, string comparison, string copy, palindrome checking, counting words and lines in strings).
8. Develop a program to create an employee details using structure and prepare a pay slip.
9. Creation and processing of Sequential files for Mark list preparation.

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CORE COURSE V – OPERATING SYSTEM PRACTICAL

1. Write a menu driven shell program for the following:
   ii. List of files,
   iii. Processes of Users
   iv. Today's Date
   v. Users of system
   vi. Quit.

2. Write a shell program which accepts the name of a file from the standard input and then performs the following tests on it.
   i. File existence,
   ii. File readable
   iii. File Writable
   iv. Both readable and writable.

3. Write a shell program to accept an input and check if the given input is a directory. If it is a directory, then display the contents and revoke the execute permission for group and others for all files starting with "a" in the directory.

4. Write a shell program using three arguments to take the pattern as well as input and output file names. If the pattern is found display "Pattern found", else display "Error message". Also check if right number of arguments is entered.

5. Write a menu driven shell program to copy, edit, rename, and delete a file.

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CORE COURSE VI – PROGRAMMING IN ASP

Objectives:

- Understand the development and deployment cycles of enterprise applications.
- Utilize the .NET framework to build distributed enterprise applications.
- Able to develop ASP.NET Web Services, secure web services, and .NET remoting applications.
- Develop web applications using a combination of client-side (JavaScript, HTML) and server-side technologies (ASP.NET, ADO.NET).

Unit I

Introduction to ASP – Active Server Pages Model – ASP File – the process of serving an Active Server Page – Using Scripting Languages – Setting the Primary Scripting Language – Including other files – Understanding objects.

Unit II

Understanding components – Working with users – working with HTML forms – retrieving form data – using text boxes and text areas.

Unit III

Cookies – working with cookies – applications of cookies – addressing the drawbacks of using cookies – using cookies in ASP applications. Working with connections and data sources – creating connections with OLEdb and ODBC – connecting to Microsoft SQL server – connecting to a Microsoft access database.

Unit IV

About the connection object – executing a SQL statement with the connection object – understanding session and connection pooling – working with record sets – retrieving a record set – record set cursor and locking types – understanding ADO cursors – paging through a record set.

Unit V

Working with the command object – creating stored procedures – executing stored procedures with the connection object – executing stored procedures with the command object – retrieving parameter information.

Text Books :

1. Practical ASP – Ivan Bayross, BPB Publications, 2000
2. Special Edition Using Active Server Pages – Scot Johnson, Prentice Hall of India Private Limited 2001.

Reference Book:

1.Mastering Active Server Pages 3, Russell Jones, Sybex Publishers

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CORE COURSE VII – DATABASE SYSTEM CONCEPTS

Objectives

- **To analyze the difference between traditional file system and DBMS.**
- **Able to handle with different database languages.**
- **Able to write queries mathematically.**
- **To design database and normalize data.**

UNIT – I Introduction

Database-System Applications- Purpose of Database Systems - View of Data - Database Languages - Relational Databases - Database Design -Object-Based and Semi structured Databases - Data Storage and Querying Transaction Management -Data Mining and Analysis - Database Architecture - Database Users and Administrators - History of Database Systems.

UNIT – II Relational Model:

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

UNIT – III SQL

Data Definition - Basic Structure of SQL Queries - Set Operations - Aggregate Functions - Null Values - Nested Sub queries – Complex Queries - Views - Modification of the Database - Joined Relations - SQL Data Types and Schemas - Integrity Constraints -Authorization - Embedded SQL

UNIT – IV Relational Languages

The Tuple Relational Calculus - The Domain Relational Calculus - Query-by-Example. Database Design and the E-R Model: Overview of the Design Process - The Entity-Relationship Model - 3 Constraints - Entity-Relationship Diagrams - Entity-Relationship Design Issues - Weak Entity Sets - Database Design for Banking Enterprise

UNIT – V Relational Database Design

Features of Good Relational Designs - Atomic Domains and First Normal Form - Decomposition Using Functional Dependencies - Functional- Dependency Theory - Decomposition Using Functional Dependencies – Decomposition Using Multivalued Dependencies-More Normal Forms - Database-Design Process.

Text Book:

1. Database System Concepts, Fifth edition, Abraham Silberschatz , Henry F. Korth, S.Sudarshan, McGraw-Hill-2005. [Unit-1 (Chapters - 1); Unit-2 (Chapters – 2); Unit-3 (Chapters – 3, 4); Unit-4 (Chapters – 5, 6); Unit-5 (Chapters – 7)]

Reference Books:

1.“An introduction to database systems”, Bipin C. Desai, Galgotia Publications Pvt Ltd,1991.
2.“An Introduction to Database Systems”, C.J.Date, Third Edition Addison Wesley 1983.

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CORE COURSE VIII – DESKTOP PUBLISHING

Unit I Introduction to Computers

Meaning of Computer – Characteristics of Computer – Areas of application – l – p – o cycle – Component of Computer – Memory and control unit – Input and Output device – Hardware and Software Operation Systems – Introduction to Windows 98 Logging on Desktop & Taskbar Icons on desktop – Start menu options Creation of files and folders.

Unit II Introduction to Word 2000

Starting word 2000- Creating short cut for word 2000 – creating word documents – creating business letters using wizards – editing word documents – inserting objects formatting documents – spelling and grammar check – word count – thesaurus auto correct working with tables – saving, opening and closing documents – mail merge.

Unit III Spread Sheets

Introduction to spread sheets – spread sheet programmes and applications - - Ms Excel and its features – what is on the screen? - Building work sheets – entering data in work sheets, editing and formatting work sheets – creating and formatting different types of charts – application of financial and statistical function – creating a – Analyzing and organizing data using Automatic rule total saving, opening and closing work books.

Unit IV Tally

Fundamentals of Computerized accounting – Computerized accounting vs manual accounts. Architecture and customization of tally – Features of tally – Configuration of Tally screens and menus – Creation of company – Creating of groups – Editing and deleting groups - Caution of ledgers - Editing and deleting ledgers – Introduction to vouchers – Editing and deleting vouchers.

Unit V Accounting

Introduction to Inventories – Creation of stock categories – Creation of Stock groups – Creation of Stock items – Configuration and features of stock item – Editing and deleting stocks – stock vouchers – Generating and printing reports in detailed and condensed format. Day books – Balanced sheets – Trial balance – Profit and Loss Account –Inventory report Bank reconciliation statement conclusion.

References:

1. Microsoft office for Windows 95 Bible Author Ed. Jones and Derek Sulton Publications Comdex Computer Publication TIAL
2. Smart Accountant Book SMW Deva Publication, AVC Deva Publication
3. Computerized Accounting under Tally Publication, Deva Publication Implementing Tally 5-4 Author K.K. Nadhani Publication BPB Publication.

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CORE COURSE IX – DESKTOP PUBLISHING PRACTICAL

MS word (Unit II)

- Creating Business Letters
- Creating an application for the job with Bio-data
- Creating circular letter with Mail Merge options
- Creating a Table by using the split and merge options

MS – Excel (Unit III)

- Creating a work sheet like Mark Sheet, Pay Slip, PF Contribution list etc.
- Creating Charts
- Creating a list for the enclosures
- Filtering the date using Auto filter custom filters using comparison operations.

Accounting Package (Unit IV & V)

- Preparing voucher entries for the given transactions
- Preparing final accounts from the Trial Balance given with any ten adjustments

CORE COURSE X - ASP Practical

1. Create an ASP file to display the message “Have a Good Weekend” if it is a Saturday otherwise “Hang in there, the week will get better”.
2. Write an program to get the name and favorite ice cream flavor. Respond with the price of the corresponding ice cream.
2. Create a login form, to expire, if the user does not type the password within 100 seconds.
3. Create an advertisement for a bookshop using Ad Rotator component.
4. Create a course registration form with name, address and list of available course. Reply with the corresponding course fees on selection of a single course or a collection of courses.
5. Write a program to manipulate cookies with the information between HTTP sessions such as i. Last Date visited ii. Last Time visited iii. Number of visits.
6. Create a student database and manipulate the records using the connection object in ASP.
7. Create an employee database and manipulate the records using command object in ASP.