SEMESTER 2nd
MAJOR COURSE

CAP222J: COMPUTER APPLICATIONS (PROGRAMMING FUNDAMENTALS THROUGH C)

CREDITS: 4 + 2

COURSE OBJECTIVES:

1. *To demonstrate the use of flowcharts and algorithms for problem solving*
2. *To introduce the concepts of structured programming*
3. *To familiarize the student with the syntactic constructs of C*
4. *To enable to the students to translate algorithms into C programs*

THEORY (4 CREDITS)

UNIT – I **(15 Lectures)**

Programming Languages: History and Role of Programming Languages, Syntax and semantics, source code and object code, datatypes, variables, constants, declaration, Structured Data Types. Sequence Control: Implicit and Explicit. Sequence control between Statements. Subprogram Control: Simple call return and recursive subprogram. Language Paradigms: Simple Procedural Languages, Block Structured Programming Languages, Object Based Languages, Functional Languages, Logic Programming Languages.

Flowcharts, Flowchart Elements, Problem Solving Through Flowcharts.

Algorithms, Characteristics of an Algorithm, Algorithms for basic problems.

UNIT – II

Introduction to C Programming **(15 Lectures)**

History and overview of C, Basic structure of a C Program, Compilation, Execution and Debugging of programs in C.

Keywords, Identifiers and Datatypes. Variables and Constants. Comments. Console I/O using printf() and scanf(). Typecasting.

Operators – Arithmetic, Logical, Relational, Increment Decrement and Assignment Operators. Expressions. Operator Precedence.

Conditional Statements (If, If-Else, If-Else If, Nested If, Switch).

UNIT – III **(15 Lectures)**

Looping, Functions and Pointers.

Loops (while, do-while, for). Break and Continue. Nested Loops.

Functions: Declaring, Defining and Calling. Call by Value, Call by Reference. Function Arguments and Return Values.

Pointers: Declaring and Initializing. Accessing value of a pointer variable. Pointer Expressions. Pointer Increments and Scale Factors. Pointers and Arrays. Passing Pointers to Functions.

UNIT – IV

Arrays, Strings, Structures and Unions

Declaring, Initializing 1-D arrays and 2-D arrays. Accessing Elements of an Array, Memory Layout of Arrays. Passing Arrays to Functions, Command Line Arguments.

Character Arrays and String. Declaring and Initializing Strings, Reading and Writing Strings, String Handling Function (strlen, strcat, strcmp, strcpy).

Structures and Unions: Declaring, initializing and using simple structures and unions, Manipulating individual members of structures and unions, Array of structures, Passing structures to functions.

Dynamic Memory Allocation using malloc and free.

TEXTBOOKS:

1. Terence Pratt, Programming Languages Design and Implementation (Pearson/Prentice Hall)
2. Balagurusamy, Programming in ANSI C, 8th Edition (McGraw Hill)

REFERENCES:

1. Kanetkar - Let us C (BPB Publications)
2. Ghezzi, Jazayeri - Programming Language Concepts (Wiley)
3. Srivastava – C in Depth (BPB Publications)
4. Beej's Guide to C Programming
5. Byron Gottfried - Schaum's Outline of Programming with C (McGraw-Hill)

LABORATORY COURSE (02 CREDITS):

1. WAP to print the sum of digits of an integer.
2. WAP to print the product of digits of an integer.
3. WAP to reverse a number.
4. WAP to compute the sum of the first n terms of the following series S = 1+1/2+1/3+1/4+……
5. WAP to compute the sum of the first n terms of the following series S =1-2+3-4+5…….
6. Write a program to check whether a given string is Palindrome or not. Convert this program into to a function that checks if a given string is a palindrome.
7. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
8. WAP to compute the factors of a given number.
9. Write a macro that swaps two numbers. WAP to use it.
10. WAP to print a triangle of stars as follows (take number of lines from user):

```
*
***
*****
*******
*********
```

11. WAP to perform following actions on an array entered by the user:

i) Print the even-valued elements
ii) Print the odd-valued elements
iii) Calculate and print the sum and average of the elements of the array

The program should present a menu to the user and ask for one of the options. The menu should also include options to re-enter array and to quit the program.

12. Write a program that swaps two numbers using pointers.
13. Write a program in which a function is passed address of two variables and then alter its contents.
14. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main() function.
15. Write a program to create an array of user-defined size dynamically using malloc() function. Display the sum of values entered in it and use free() to release its memory.
16. Write a program to perform following operations on strings:
    a) Show address of each character in string
    b) Concatenate two strings without using strcat function.
    c) Concatenate two strings using strcat function.
    d) Compare two strings
    e) Reverse the string

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SEMESTER 2nd

MINOR COURSE

ACP222N: APPLIED COMPUTING (WEB DESIGNING)

CREDITS: 4 + 2

Unit-I

Markup Languages, Introduction to HTML5, Development Environment Setup, Anatomy of an HTML Tag, Basic Structure of HTML Document, HTML Content Models, Meta-Tags, Formatting Tags, Text Level Formatting, Lists, Hyperlinks, Image and Image Maps, Table Tags, HTML Comment tag. Block and inline elements, redirecting to another URL, creating division-based layouts. Forms: creating basic form, using check boxes, textboxes and option buttons, input validation and additional input types in HTML5, HTML multimedia basics. HTML DOM structure.

Unit II:

Need for CSS. Different approaches to style sheets, Anatomy of a CSS Rule. Element, Class, and ID Selectors. Combining Selectors, Pseudo-Class Selectors. Style Placement, Conflict Resolution, Styling Text.Wildcard Selectors (*, ^ and $) in CSS. Web fonts. Working with Browser Developer Tools.CSS Box Model:- background, margin, padding, Float and z-index properties, Relative and Absolute Element Positioning. Basic Introduction to Bootstrap Framework.

Unit-III

Introduction to Javascript, Different approaches to place Javascript code in an HTML File. JS identifiers, Reserved Words, Optional Semicolons, Comments, Literals. Types, Values and Variables: Numbers, Text, Booleans. Nulls and undefined. Type Conversions. Variable Declaration and Assignment. Const, let and var.
Expressions and Operators: Arithmetic, Relational, Logical, Assignment and Evaluation Expressions. Conditionals: if, else if and switch. Loops: while and for. Break, continue, return and yield.
Functions: Defining, Invoking, Function Arguments and Parameters. Functions as Values.

Unit-IV

Objects: Creating Objects, Querying and setting Properties, Deleting and Testing Properties. Serializing Objects. Arrays: Creating, Reading, Writing arrays. Array length. Iterating Arrays, Strings as Arrays.
The Document Object Model, Program Input and Output, Browser Events and Event Handling.

Recommended Books:

1. Jennifer Robbins - Learning Web Design : A Beginner's Guide to HTML, CSS, JavaScript, and Web Graphics (5e, 2018, O'Reilly Media)
2. Terry Felke-Morris - Web Development & Design Foundations with HTML5 (8e, 2017, Pearson)
3. Eric Meyer, Estelle Weyl - CSS The Definitive Guide (4e, 2018, O'Reilly Media)
4. David Sawyer McFarland - CSS The Missing Manual (4e, 2015, O'Reilly Media)
5. David Flanagan - JavaScript_ The Definitive Guide (7e, 2020, O'Reilly Media)
6. Cay S. Horstmann - Modern JavaScript for the Impatient (Addison-Wesley Professional, 2020)

WEB DESIGNING LAB

1. Design a Home page for your college
2. Design a web page with links to different pages and allow navigation between web pages.
3. Design a web page using Images
4. Use a HTML table to design a page with a header, sidebar, main content and footer.
5. Design a user registration form using different HTML form controls
6. Design a web page with buttons that can handle different page events using JS event handlers.
7. Use Java Script to change the image displayed in an img tag when a button on the page is clicked.
8. Use bootstrap to add formatting to your home page.
9. Write a JavaScript program with proper GUI to perform unit conversion using the onChange event.
10. Design the interface of a login page using HTML and CSS.
11. Design a simple "To Do" Application using HTML/CSS/JavaScript.
12. Design Basic Calculator using HTML/CSS/JavaScript.
13. Design and develop a simple "Tic-Tac-Toe Game" using HTML/CSS/JavaScript.
14. Remove a specific table row using Java Script.
15. Set value in input text using Java Script.
16. Set a value in a span using Java Script.

COMMERCE: MANAGEMENT

SEMESTER-I	*MULTI-DISCIPLINARY COURSE*
COM022I3: COMMERCE _ HUMAN RESOURCE MANAGEMENT (HRM) AND MARKETING (MANAGEMENT)	*CREDITS: 3*

***Course Description**:*

This is multi-disciplinary course of 03 credits (01 credit for each unit).This course is designed to provide a basic understanding related to management and marketing. The course will cover the Evolution of Management Thought and Various Marketing Concepts. Besides, the course discusses various management processes: planning, organizing, directing, leading and controlling. The course is also focused on Marketing-mix variables and Strategies and divulges in detail each element of market mix variable, i.e., Product, Price, Placement and Promotion.

Course Objectives:

The objective of the course is to provide the student with an understanding of basic management and marketing concepts, principles and practices.

Learning Outcomes:

After completing this course, the student is expected to:
LO1: develop basis understanding of management thought.
LO2: develop an understanding of various management processes: planning, organizing, directing, leading and controlling.
LO3: understand the practical implication of product, price, placement and promotion related decisions.

Detailed Curriculum:

Unit-I

Management: Definition, nature, process, functions & skills. Evolution of management thoughts - F.W. Taylor, Henri Fayol, Management Approaches- Systems approach, Contingency approach. Business Organization - Types of ownership.

Unit-II

Planning: Concept and purpose, Planning Process, Management by Objectives (MBO). Organization: Concept and purpose of organization, Types of organizations, Line & Staff. Concept of Authority, Functional Authority, Delegation of Authority, Centralization and Decentralization of Authority. Directing: Leadership - Concept, Traits and Styles. Communication: Concept, Types, process, barriers. Controlling: Concept, process, Requirement for Adequate control.

Unit –III

Customer needs, wants & demands, Products, services & experiences, Customer value & satisfaction, scope and importance of marketing; Marketing concept and its evolution; Marketing mix. Market segmentation and positioning. Product Decisions: Concept of a product; Classification of products; Product line and product mix**.** *Pricing Decisions*: Factors affecting price determination; Price setting methods. *Distribution Channels:* Functions and types of distribution channels; factors affecting choice of a channel. *Promotion Decisions*: Communication Process; Promotion mix – advertising, personal selling, sales promotion, publicity and public relations.

Suggested Readings:

1. Stoner, Freeman, Gilbert Jr.: Management (Pearson education)
2. Kootz,O'Donnell , Weighrich: Essentials of Management
3. Michael, J. Stahl: Management -Total Quality in a global environment (Blackwell Business)
4. Newman, Warren and Summer: The Process of Management, Concept, Behaviour & Practice.
5. Brech, E.F.L.: Principles and Practice of Management
6. Drucker, P.F.: Managements, Tasks, Responsibilities, Practices
7. Kotlar, Philip, Marketing Management, Prentice Hall, New Delhi.
8. Stanton, Etzel, Walker, Fundamentals of Marketing, Tata-McGraw Hill, New Delhi.
9. Saxena, Rajan, Marketing Management, Tata-McGraw Hill, New Delhi.
10. McCarthy, E.J., Basic Marketing: A managerial approach, Irwin, New York.

Note: Latest editions of text books may be used

2nd SEMESTER
COMPUTER APPLICATIONS
(JUNIOR SOFTWARE DEVELOPER)
SKILL ENHANCEMENT COURSE (SEC)

JSD222S: PROGRAMMING WITH PYTHON

CREDITS: THEORY: 2, PRACTICAL: 2

THEORY (2 CREDITS)

UNIT 1 (15 LECTURES)
Introduction to the Python language and Interpreter. Basic features and the Print() method. Basic Syntax, Shell and Scripting. Variables and Basic Data types. Operators in Python. Decision Control Structures. If, if-else, if-elif ladder, nested if.

Looping structures in Python. While loop and loop exit statements, break, continue and pass Range function and for loop. Nested loops

UNIT 2 (15 LECTURES)
Basic data structures in Python, Lists and various methods to manipulate lists. List Slicing. Some basic statistical methods on lists. sort() and reverse() methods. List Comprehension.

Dictionary and tuples and various manipulation methods. Strings in Python. String Slicing. String manipulation methods.

Files in Python. File opening and closing. File modes and types of files. With clause for file opening. Directory and file navigation methods in os-package. Functions in python

Defining a function, calling a function, Types of functions, Function Arguments, Global and local variables

Reference Books:

1. 1. Kenneth A. Lambert, The Fundamentals of Python: First Programs, Cengage Learning,
2. David Beazley , Brian K. Jones “Python Cookbook”, 3rd Edition. O’Reilly Publications
3. Jake VanderPlas “Python Data Science Handbook” O’Reilly Publications
4. David Beazley, “Python Essential Reference (4th Edition) “ Addison Wesley

PRACTICALS (2 CREDITS)

LAB SHEET-PROGRAMMING WITH PYTHON

1. Write basic programs to demonstrate the use of decision control structures in python
2. Write a program in Python to check f a number is positive, print an appropriate message
3. Write a program to prompt the user for hours and rate per hour to compute gross pay. Take into account that the factory gives the employee 1.5 times the hourly rate for hours worked above 40 hours.
4. Write basic programs to demonstrate the use of looping structures in python
5. Write a program to demonstrate continue, break and exit statement
6. Write a program to demonstrate lists in python, iterate through the list and find sum of elements
7. Write a program in python to demonstrate various methods of *list* data structure
8. Write a Python program to multiply all the items in a list
9. Write a Python program to get the largest number from a list
10. Write a Python program to get the smallest number from a list
11. Write a program to demonstrate sort(), reverse() methods
12. Write a Python program to remove duplicates from a list
13. Write a program to demonstrate *List Comprehensions*
14. Write a program which demonstrates
    - Tuple having integers, tuple with mixed data types, nested tuple
    - Accessing tuple elements through indexing
    - Negative indexing
    - Slicing
    - Deleting a tuple
    - Iteration through tuple
15. Write basic programs to *open a file, write on a file, reading a file, closing a file*
16. Write a program to prompt for a file name, and then read through the file line-by-line
17. Write a Python program to read first n lines of a file
18. Write a Python program to read last n lines of a file
19. Write a Python program to count the number of lines in a text file
20. Write a Python program to count the frequency of words in a file
21. Write a Python program to write a list to a file
22. Write a Python program to copy the contents of a file to another file
23. Write a Python program to append text to a file and display the text
24. Write a Python program to create a tuple
25. Write a Python program to create a tuple with different data types
26. Write a Python program to create a tuple with numbers and print one item
27. Write a Python program to unpack a tuple in several variables
28. Write a Python program to add an item in a tuple
29. Write a program to create a function that takes two arguments, name and age, and print their value.
30. Write a program to create function func1() to accept a variable length of arguments and print their value.

SEMESTER: 1st to 3rd
ABILITY ENHANCEMENT COURSE

ENL222A: ENGLISH LANGUAGE COURSE

CREDITS: 3

Unit I: Poetry

1. Robert Frost: "The Road Not Taken"
2. Nissim Ezekiel: "Night of the Scorpion"

Unit II: Short Story

1. Mulk Raj Anand: "The Lost Child"
2. Henry Lawson: "The Loaded Dog"

Unit III: Language in Use

1. Reading Comprehension
2. Paragraph Writing/ Essay Writing
3. Homonyms, Homophones/ Commonly misspelt words
4. Idioms and Phrases/ Phrasal verbs
5. Spellings and Sound Patterns in English/ One-Word substitution

Textbook recommended: *Step Ahead with English* (Published by Orient BlackSwan)

(Note: Exercises at the end of the literary pieces to be done in the class.)

SEMESTER – 1st to 3rd

VALUE ADDED COURSE

DTS223V DIGITAL AND TECHNOLOGICAL SOLUTIONS

CREDITS: 02

Course Objectives:

- *To gain familiarity with digital paradigms;*
- *To sensitize about role & significance of digital technology;*
- *To provide know how of communications & networks;*
- *To bring awareness about the e-governance and Digital India initiatives;*
- *To provide a flavor of emerging technologies - Cloud, Big Data, AI, 3D printing.*

Course Outcome:

1. *Knowledge about digital paradigm;*
2. *Realization of importance of digital technology, digital financial tools, e-commerce;*
3. *Know-how of communication and networks;*
4. *Familiarity with the e-governance and Digital India initiatives;*
5. *An understanding of use & applications of digital technology;*
6. *Basic knowledge of machine learning and big data.*

COURSE CONTENTS:

UNIT I

Introduction & Evolution of Digital Systems. Role & Significance of Digital Technology. Information & Communication Technology & Tools. Computer System & its working, Software and its types. Operating Systems: Types and Functions. Problem Solving: Algorithms and Flowcharts.

Communication Systems: Principles, Model & Transmission Media. Computer Networks & Internet: Concepts & Applications, WWW, Web Browsers, Search Engines, Messaging, Email, Social Networking. Computer Based Information System: Significance & Types. E-commerce & Digital Marketing: Basic Concepts, Benefits & Challenges.

UNIT II

Digital India & e-Governance: Initiatives, Infrastructure, Services and Empowerment. Digital Financial Tools: Unified Payment Interface, Aadhar Enabled Payment System, USSD, Credit / Debit Cards, e-Wallets, Internet Banking, NEFT/RTGS and IMPS, Online Bill Payments and PoS. Cyber Security: Threats, Significance, Challenges, Precautions, Safety Measures, & Tools, legal and ethical perspectives.

Emerging Technologies & their applications: Overview of Cloud Computing, Big Data, Internet of Things, Virtual Reality, Blockchain & Cryptocurrency, Robotics, Machine Learning & Artificial Intelligence, 3-D Printing. Digital Signatures.

BOOKS

1. V. Rajaraman, Introduction to Information Technology, 3rd Edition, PHI;
2. E Balagurusamy, Fundamentals of Computers, Tata Mc GrawHill;
3. Behrouz A. Forouzan, Data Communications and Networking, McGraw Hill;
4. Pramod Kumar, Anuradha Tomar, R. Sharmila, Emerging Technologies in Computing Theory, Practice, and Advances, Edition 2021, Chapman and Hall/CRC Imprint;
5. Buvya, Broberg, and Gosciniski, Cloud Computing- Principals and Paradigms, Wiley
6. Russel and Norving, Artificial Intelligence- A Modern Approach, Pearson Education;
7. Samuel Greengard, Internet of Things, MIT Press;
8. C.S.V. Murthy, E-commerce Concepts, Models, Strategies;
9. Hurwith, Nugent Halper, Kaufman, Big Data for dummies, Wiley & Sons - Wiley.

VALUE ADDED COURSE
2nd SEMESTER

UIN223V UNDERSTANDING INDIA

CREDITS: 02

Learning Objectives

1. ***To make student appreciate the value of pluralism and unity in diversity.***
2. ***To highlight the contribution of India to different branches of Knowledge***
3. ***To make students understand and appreciate the contribution made by different sections of the society towards freedom struggle***
4. ***To Inculcate in students the values promoted by the Indian National Movement***

UNIT-I

I. Bharatavarsha: Concept, Origin and its Evolution;
II. The Idea of India: Unity in diversity and Composite culture
III. Indian Education Systems: Vedic, Buddhist, Muslim; Modern Education
IV. India's Contribution to the World: Medicine- Charaka, Sushruta, Mathematics and Astronomy- Aryabhatta, Varahmihira, Ramanuja; India's Contribution to Philosphy: Sad Darshan.
V. Major Socio-Religious Reform Movements: Brahmo Samaj, Arya Samaj, Aligarh Movement

UNIT-II

I. India's struggle for Freedom: Revolt of 1857; Foundation and Role of Indian National Congress
II. Makers of Modern India: Raja Ram Mohan Roy, Rabindernath Tagore, Sir Syed Ahmad Khan, Dada Bhai Naoroji, M.K. Gandhi, J.L. Nehru, V.B. Patel, Abul Kalam Azad, B.R. Ambadekar
III. Contribution of Peasants, Tribal's, Working Classes and Women to Freedom Movement
IV. Legacy of Indian National Movement: Secularism, Socialism, Democracy.
V. Making of Indian Constitution and its Salient Features

READINGS:

I. Basu, D. (2012) 'Introduction to the Constitution of India'. New Delhi. Lexis Nexis.
II. Bhikku, Parekh (1989). Colonialism. Tradition and Reforms: An Analysis of Gandhi's Political Discourses. Neu Delhi. Sage Publications.
III. Bipan Chandra (1987). India's Struggle for Independence. Penguin. Delhi.
IV. Dhar. P. K. (2000): Growing Dimensions of Indian Economy. Kalyani Publishers. New Delhi.
V. Dhingra. I. C. (2020): Indian Economy. Sultan Chand & Sons. New Delhi.
VI. Dutt, R. and Sundharam (2018): Indian Economy. S. Chand & Co. Ltd. New Delhi
VII. Gautam A (2009): Advanced Geography of India. ShardaPustakBhawan. Allahabad.
VIII. Godschalk. D.R. (et.al.) (1999): Natural Hazard Mitigation Recasting Disaster Policy and Planning. Island Press. Washington. D.C.
IX. Gore. M. S. (2002) Unity in Diversity: The Indian Experience in Nation-Building. Rauat Publication. Jaipur.
X. Government of India, Economic Survey (Annual). Economic Division. Ministry of Finance, New Delhi.
XI. K. Roy, C. Saunders and J. Kincaid (2006) (eds.) 'A Global Dialogue on Federalism'. Volume 3Montreal, Queen's University Press.
XII. Kabir. Humayun (1946). Our Heritage. National Information and Publications Ltd., Mumbai.
XIII. L. Rudolph and S. Rudolph. (2008) 'Explaining Indian Institutions: A Fifty-Year Perspective, 1956-2006'. Volume 2. Neu Delhi. Oxford University Press.
XIV. M. Singh, and R. Saxena (2011) (eds.), 'Indian Politics: Constitutional Foundations and Institutional Functioning'. Delhi: PHI Learning Private Ltd.
XV. Malik. S. C. (1975). Understanding Indian Civilization: A Framework of Enquiry. Indian Institute of Advanced Study. Shimla.
XVI. Ministry of Human Resource Development.
XVII. Ministry of Skill Development and Entrepreneurship.
XVIII. Misra, S.K and Puri (2020), V.K.: Indian Economy. Himalaya Publishing House, Mumbai.
XIX. MoEF. 2006: National Environmental Policy-2006. Ministry of Environment and Forests. Government of India
XX. MoEF. 2006: National Environmental Policy-2006. Ministry of Environment and Forests. Government of India
XXI. RomilaThapar (2016) History of India. Tylor and Francis.
XXII. S. Chaubc. (2009) 'The Making and Working of the Indian Constitution*. Neu Delhi. National Book Trust
XXIII. S. Cohen. (2002) India: Emerging Power. Brookings Institution Press
XXIV. Satish Chandra (2009) History of Medieval India, Orient Black Swan. Neu Delhi.
XXV. Schneider. T. and Collins, L. (1998): Disaster Management and Preparedness. Lewis Publishers. Washington, D.C. 12.
XXVI. Sharma. T.C. (2013) Economic Geography of India. Rauat Publication. Jaipur.
XXVII. Tiwari. R.C. (2007) Geography of India. PrayagPustakBhauan. Allahabad.