MANONMANIAM SUNDARANAR UNIVERSITY, TIRUNELVELI

UG COURSES – AFFILIATED COLLEGES

B.C.A.

(Choice Based Credit System)

(with effect from the academic year 2017-2018 onwards)

Sem. (1)	Pt. I/II/ III/ IV/V (2)	Sub No. (3)	Subject Status (4)	Subject Title (5)	Con-tact Hrs/ Week (6)	L Hrs./ Week (7)	T Hrs./ Week (8)	P Hrs./ Week (9)	C Credits (10)
I	I	1	Language	Tamil / Other Language	6	6	0	0	4
	II	2	Language	English	6	6	0	0	4
	III	3	Core	Programming in C	4	4	0	0	4
	III	4	Major Practical - I	C Programming Lab	4	0	0	4	2
	III	5	Allied - I	Digital Design	4	4	0	0	3
	III	6	Allied Practical - I	Office automation Lab - I	4	0	0	4	2
	IV	7	Common	Environmental Studies	2	2	0	0	2
	Subtotal				**30**				**21**
II	I	8	Language	Tamil/Other Language	6	6	0	0	4
	II	9	Language	English	6	6	0	0	4
	III	10	Core	Object Oriented Programming with C++	4	5	0	0	4
	III	11	Major Practical - II	Object Oriented Programming with C++ Lab	4	0	0	4	2
	III	12	Allied - II	Mathematical Foundation for Computer Science	4	3	0	0	3
	III	13	Allied Practical - II	Office automation Lab - II	4	0	0	4	2
	IV	14	Common	Value Based Education / Social Harmony	2	2	0	0	2
	Subtotal				**30**				**21**
III	III	15	Core	Java Programming	5	5	0	0	4
	III	16	Core	Financial Accounting	5	5	0	0	4
	III	17	Major Practical - III	Java Programming Lab	6	0	0	6	3
	III	18	Allied - III	Data Structures	4	4	0	0	3
	III	19	Allied Practical - III	Data Structures Lab	4	0	0	4	2
	III	20	Skilled Based Core - Theory	Fundamentals of Operating System	4	4	0	0	4
	IV	21	Non-Major Elective	Introduction to IT / Introduction to Computers	2	2	0	0	2
	Subtotal				**30**				**22**

IV	III	22	Core	Visual Basic	5	5	0	0	4
	III	23	Major Practical - IV	Visual basic Lab	6	0	0	6	3
	III	24	Major Elective - I	Micro Processor / E-Commerce / System Programming	5	5	0	0	4
	III	25	Allied - IV	Resource Management Techniques	4	4	0	0	3
	III	26	Allied Practical - IV	TALLY Lab	4	0	0	4	2
	IV	27	Common	Personality Development & Yoga	4	0	0	0	4
	IV	28	Non-Major Elective	Introduction to HTML / MS Word	2	2	0	0	2
	V	29	Extension Activity	NCC,NSS, YRC,YWF	-	0	0	-	1
	Subtotal				**30**				**23**
V	III	30	Core	Software Engineering	5	5	0	0	4
	III	31	Core	Web Technology	5	5	0	0	4
	III	32	Core	RDBMS	5	5	0	0	4
	III	33	Major Practical - V	RDBMS Lab	4	0	0	4	2
	III	34	Major Elective - II	Artificial Intelligence / Design & Analysis of Algorithm / Cyber Security	5	5	0	0	4
	III	35	Project	Mini Project	4	0	0	4	4
	IV	36	Common	Computers for Digital Era	2	2	0	0	2
	Subtotal				**30**				**24**
VI	III	37	Core	Operating Systems	4	4	0	0	4
	III	38	Core	Computer Networks	4	4	0	0	4
	III	39	Core	Computer Graphics	4	4	0	0	4
	III	40	Core	Multimedia	4	4	0	0	4
	III	41	Major Practical – VI	Graphics Lab	4	0	0	4	2
	III	42	Major Elective - III	Web Services / Software Project Management / Mobile Communications	4	4	0	0	4
	III	43	Project	Major Project (Group)	6	0	0	6	7
	Subtotal				**30**				**29**
				Total					**140***

Total Credits =21+21+22+23+24+29 = 140

- *10 Hours of Practical
- **L** - Lecture **T** - Tutorial **P** - Practical

MSU/ 2017-18 / UG-Colleges / Part-III (B.C.A) / Semester – I / Core - 1

Programming in C

Unit I

Overview of C:

Introduction- Importance of C - Sample C Programs - Basic structure of C - Executing C program

Constant, variables and data types:

Introduction- Character set - tokens – keywords and identifiers – constants – variables- data types – declaration of variables – assigning values of variables.

Operators and expressions:

Introduction – arithmetic of operations- relational operator – assignment operator – increment and decrement operator – conditional operator – bitwise operator – special operator – evaluation of expressions – precedence of arithmetic operators – type conversion in expression- operator precedence and associatively- mathematical functions

Unit II

Managing input and output operators:

Introduction: Reading a character- writing a character – formatted input – formatted output

Decision making and branching:

Introduction – decision making with IF statement- simple IF statement – The IF ELSE statement- nesting of IF –ELSE statement –ELSE IF ladders- The switch statement – The?: operators – The GOTO statement

Decision making and looping:

The While statement – The Do statement – The for statement- Jump in loops

Unit III

Arrays:

One dimensional arrays – two dimensional arrays -Initializing two dimensional arrays – multi dimensional arrays

Handling of character strings:

Introduction: declaring and Initializing string variables- Reading string from terminal- writing string to screen – arithmetic operation on characters – putting strings together – comparison of two strings together – string handling functions

Unit IV

User defined functions:

Introduction – need for user- define functions- A multi- function program – The form of C functions- return values and their types – calling a function- category of function – no argument and no return values – argument with no return values -argument with return values – handling of non integer functions – nesting of functions – recursion – function with arrays – the scope and life time of variables in functions.

Unit V

Pointers

Introduction: understanding pointers – accessing the address of variables – declaring and initializing pointers – accessing a variable through its pointer – pointer expressions – pointer increments and scale factor – pointers and character strings – pointers and functions – points on pointer.

TOTAL: 60 HOURS

Text Book:

Programming in ANSI C – By E.Balagurusamy, Tata Mc Graw-Hill Publishing Company

Reference Book:

Programming with ANSI and TURBO C – by Ashok N. Kamthane

MSU/ 2017-18 / UG-Colleges / Part-III (B.C.A) / Semester – I / Major Practical

C Programming Lab – Practical List

1. Find the area of the Triangle
2. To Solve the possible roots of the quadratic equation
3. To arrange a List of numbers in Descending order
4. To Find Ncr Value using Functions
5. To Check given string is palindrome or not
6. To find Transpose of a Matrix
7. To Multiply two matrices
8. To Prepare a Mark list
9. To sort a List of names in alphabetical order

DIGITAL DESIGN

Unit I : Digital System and binary numbers:

Digital systems – binary numbers – number base conversion – Octal and hexa decimal numbers – complements – signed binary numbers – binary codes – binary storage and registers – binary logic

Boolean algebra:

Introduction – basic definition – axiomatic definition of Boolean algebra – basic theorem and properties and of Boolean algebra – Boolean functions.

Unit II : Logic gates:

Canonical and standard forms – other logic operations – digital logic gates and integrated circuits

Gate-Level minimization:

Introduction : The Map method – Four- variable Maps –Five-variable Map – Product –of-sums simplifications- Don't conditions

Unit III : NAND and NOR implementation- other two level implementations – Exclusive OR Functions

Combinational Logic: Introduction – Combinational circuits – Analysis Procedure - Design Procedure – Binary Adder – Subtractor – Decimal Adder - Binary Multiplier - Magnitude Comparator

Unit IV : Decoders - Encoders – Multiplexers

Synchronous Sequential Logic:

Introduction –Sequential Circuits – Storage Element Latches - Storage Element Flip- Flops - Analysis of Clocked Sequential Circuits

Unit V :

Registers and Counters: Registers – Shift Registers – Ripple Counters – Synchronous Counters – Other counters

Memory : Introduction – Random access memory – Memory Decoding – Error Detection and Correction – Read Only Memory.

TOTAL: 45 HOURS

Text Book:

Digital Design Fourth Edition – M, Morris Mano, Michael D Ciletti ,Prentice Hall of India Pvt Ltd.

Reference Books:

1.Digital Principles and Applications Fourth Edition – Albert Paul Malvino, Donald P Leach, Tata Mc Graw Hill Publishing Company Ltd.

2. Digital Principles and Design – Donald d.Givone, Tata McGraw – Hill Publishing Company Limited

Office Automation Lab –I

MS-WORD

1. Creating and saving documents
2. Letter Typing and Editing
3. Design an invitation
4. Design a Calendar
5. Design a Time Table
6. Prepare student Bio-Data
7. Using of Header/Footer/Book mark/Spell Check
8. Design an cover page
9. Mathematical Equations and Symbols
10. Mail Merge

MS-EXCEL

1. Mark sheet Preparation
2. Pay roll Preparation
3. Sales details
4. Graphs and Charts
5. Mathematical/Statistical /Logical Functions
6. Budget Preparation

MSU/ 2017-18 / UG-Colleges / Part-III (B.C.A) / Semester – II / Core - 2

OBJECT ORIENTED PROGRAMMING WITH C++

UNIT I

Principles of Object-oriented Programming: Software Evolution – A look at Procedure-Oriented Programming – Object-Oriented Programming Paradigm – Basic concepts of object-Oriented Programming – Benefits of OOP – Object-Oriented Languages- Applications of OOP

Beginning with C++ : What is C++? – Applications of C++ - A simple C++ Program – More C++ statements – An example with Class- Structure of C++ Program – Reference Variables – Operators in C++ - Scope Resolution Operator – Member De referencing Operators – Memory Management Operators – Manipulators – Type Cast Operators

UNIT II

Functions in C++: Introduction – The Main Function – Function prototyping – Call by Reference – Return by reference – Inline Functions - Default Arguments – const Arguments – Function Overloading – Math Library Functions

Classes and Objects: Introduction - C Structure Revisited – Specifying a Class – Defining Member Function-A C++ Program with Class -Making an outside Function Inline –Nesting of Member Function – Private member functions- Arrays with in a class – Memory allocation for objects – Static Data Members – Static Member Functions, Arrays of objects – Objects as Function arguments – Friendly Functions – Returning Objects - Pointers to Members – Local Classes

UNIT III

Constructors and Destructors : Introduction – Constructors – Parameterized constructors – multiple constructors in a class – Constructors with Default arguments – Dynamic Initialization of Objects- Copy Constructors – Dynamic Constructors – Constructing two dimensional Arrays – Destructors

Operator Overloading and Type Conversion:

Introduction – Defining Operator Overloading – Overloading unary operators – Overloading Binary Operators – Overloading binary operators using Friends – Manipulation of strings using operators – Rules for overloading operators – Type conversions

UNIT IV

Inheritance : Extending Classes : Introduction – Defining Derived Classes – Single inheritance – Making a Private Member Inheritable – Multilevel Inheritance – Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance – Virtual Base Classes -Abstract Classes – Constructors in Derived Classes – Member Classes –Nesting of Classes

Unit V

Managing Console I/O Operations: Introduction - C++ Streams – C++ Stream Classes – Unformatted I/O Operations – Formatted Console I/O Operation – Managing output with Manipulators

Working with Files: Introduction – Classes for File Stream Operators – Opening and closing a File – Detecting end-of-file _ File Pointers and their Manipulators – Sequential Input and Output Operations – Error Handling during File Operations – Command –Line Arguments.

TOTAL: 60 HOURS

Text Book:

Object Oriented Programming C++ Third Edition – E Balagurusamy, Tata McGraw-Hill Publishing Company Limited

Reference Book:

1. Complete Reference C++ - Herbert Schildt, Fourth Edition, Tata McGraw-Hill Publishing Company Limited
2. Object Oriented Programming with ANSI and Turbo C++ - Ashok N. Kamthane, Pearson Edition
3. C++ How to Program – Deitel, Fifth Edition Prentice Hall of India
4. Programming with C++ - D.Ravichandran, Second Edition , Tata McGraw-Hill Publishing Company Limited

MSU/ 2017-18 / UG-Colleges / Part-III (B.C.A) / Semester – II / Major Practical - 2

OBJECT ORIENTED PROGRAMMING C++ PRACTICAL LIST

1. Finding the Volume of any three geometric figures using function Overloading
2. Exchange values between two class objects using friend functions
3. Define a class to represent a bank account

   Data Members:

   1. Name of the Depositor
   2. Account Name
   3. Type of Account
   4. Balance amount in the Bank

   Member Functions

   1. To Assign initial values
   2. To withdraw an amount
   3. To Deposit an amount
   4. To display name and balance

   Write a main Program to test the program

4. Find the minimum of two objects using friend function
5. Using Dynamic Constructors , concatenate two strings
6. Overload unary minus operator to change the sign of given vectors (3 elements)
7. Overload Binary + Operator to add two complex numbers
8. Add two vector objects . Use >> and << overloading
9. Process student Mark List using multilevel inheritance
10. Using Hierarchical inheritance process employee details

MSU/ 2017-18 / UG-Colleges / Part-III (B.C.A) / Semester – II / Allied –II

MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE

UNIT I

Set Theory : Basic Concepts of Set Theory - Inclusion and Equality of Sets – Power Set – Operations on Sets – Cartesian Products – Relations – Equivalence Relations

UNIT II

Functions: Definition – Examples – One and Onto Functions – Bijective Functions – Identify Functions - Composition of Functions – Inverse Functions

Unit III

Mathematical Logic : Statements and Notation – Connectives – Negation, Conjunction, Disjunction – Statement Formulas and Truth Tables – Conditional and Bi conditional – well formed Formulas – Tautology – Equivalence of Formulas – Duality Law – Principle Disjunctive Normal Forms – Principal conjunctive Normal Forms

Unit IV

Graph: Definition – Examples – Sub graphs – Finite and Infinite Graph – Degree of a Vertex – Isolated and Pendent Vertices – Types of Graphs – Examples

Unit V

Paths and Circuits: Walk, Path and Circuits – Connected and Disconnected Graphs – Euler Graphs – Operations on Graphs – Trees – Properties of Trees – Rooted and Binary Trees .

Text Book:

Mathematical Foundations for Computer Science – Part I - D Glory Ratna Mary, Y.S.Irine Viola, Veda Publications

Reference Books:

1. Modern Algebra – Arumugam and Isaac, SciTech Publications
2. Graph Theory - Arumugam and Isaac
3. Discrete Mathematics for Computer Science – Hary Haggard, John Schlipf and Sue Whitesides, Thomson Publications.

TOTAL: 45 HOURS

Office Automation Lab – II

MS - ACCESS

1.Mark List creation
2. Salary List Preparation
3.Electricity Bill Generation
4. Report Generation
5. Creation of Mailing Labels

MS - POWER POINT

1. Creating a Presentation from Scratch
2. Creating Presentation using Design Template
3. Creating an animated Presentation with sound effect
4. Creating a presentation about your personality