1st SEMESTER M.C.A

F.M - 70

MCA-101 Programming in "C"(3-1-0) Cr.-4

Module – 1: C Language Fundamentals

Character set, Identifiers, keyword, data types, Constants and variables, statements, expression, operators, precedence of operators, Input-output. Assignments, control structures, decision making and looping, decision making and branching.

Module – 2: Arrays, functions and strings

Declaration, manipulation and String – handling functions, monolithic vs. Modular programs, user defined vs. standard functions, formal vs. actual arguments, function – category, function prototypes, parameter passing, recursion, and storage classes: auto, extern, global, static.

Module – 3: Pointers, structures, Union and File Handling

Pointer variable and its importance, pointer arithmetic, passing parameters, Declaration of structures, pointer to pointer, pointer to structure, pointer to function, union, dynamic memory allocation, file managements.

BOOKS:

1. **E.Balagurusamy "Programming in C". Tata McGraw Hill**
2. **Y. Kanetkar "Let Us C". BPB publication**
3. **Ashok N. Kamthane "Programming with ANSI and TURBO C". Pearson Education**

1st SEMESTER M.C.A.

F.M.- 70

MCA-102 MICROPROCESSOR AND ASSEMBLY LANGUAGE PROGRAMMING (3-1-0)Cr.-4

Module - 1 (12 hrs)

Microprocessors: 8085 architecture, bus organization, registers, ALU, control section, pin-diagram, basic fetch and execute cycle of a program, timing diagrams, types of instructions, instruction format, data format, addressing modes, instruction set of 8085, Programming the 8085, Interrupts and ISR.

Module - 2 (08 hrs)

Memory Interfacing: address space partitioning, logic devices for interfacing, R/W and ROM models, memory map addresses, memory address range of 1K memory chip, memory address lines, memory word size, memory classification, memory structure and its requirements, basic concepts in memory interfacing, address decoding and memory addresses, interfacing the 8155 memory chip, absolute vs. partial decoding.

Module - 3 (12 hrs)

Data transfer techniques & support chips: Data transfer techniques, programmed data transfer, direct memory access data transfer, basic idea about 8212, 8255, 8257 and 8259, analog to digital interfacing, A/D and D/A converters, analog signal conditioning circuits, data acquisition systems.

Module - 4 (08 hrs)

8086 microprocessor & Microcontroller: Features of advanced microprocessors, 8086 microprocessor architecture, register organization, addressing modes; Microcontrollers and embedded processors, overview of the 8051 microcontroller family.

Books:

1. Ramesh S. Gaonkar, "*Microprocessor Architecture, Programming and Application with the 8085*", Fourth Edition, Penram International Publishing (India).
2. B. Ram, "*Fundamentals of Microprocessors and Microcomputers*", Dhanpat Rai Publications.
3. D.V. Hall, "*Microprocessors and Interfacing*",2nd Edition McGraw-Hill Book Company.
4. M.A. Mazidi and J.G. Mazidi, "*The 8051 Microcontroller and Embedded Systems*", Pearson Education, India.
5. A.K.Ray and K.M.Bhurchandi – "*Advanced Microprocessors & Peripherals"* Tata McGraw Hill.

1st SEMESTER M.C.A.

F.M.- 70

MCA-103 **DISCRETE MATHMETICS (3-1-0)Cr.-4**

Module 1: The Foundations: Logic and Proof,Sets and Functions
Logic,Propositional Equivalences,Predicates and Quantifiers,Nested Quantifiers,Methods of Proof,Sets,Set Operations,Functions.
The Fundamentals: Algorithms,The Growth of Functions,Complexity of Algorithms,The Integers and Division,Integers and Algorithms,Application of Number Theory, Matrices.
Mathematical Reasoning,Introduction and Recursion : Proof Strategy,Sequences and Summations,Mathematical Induction,Recursive Definitions and Structural Induction , Recursive Algorithms,Program Correctness

Module 2: Counting: The Basics of Counting,The Pigeonhole Principle,Permutations and Combinations,Binomial Coefficients,Generalized Permutations and Combinations,Generating Permutations and Combinations.
Discrete Probability: Introduction,Probability Theory ,Expected Value and Variance.
Advanced Counting Techniques: Recurrence Relations ,Solving Recurrence Relations,Divide-and-Conquer Algorithms and Recurrence Relations,Generating Functions,Inclusion-Exclusion and its Application.

Module 3: Relations : Relations and their Properties ,n-ary Relations and Their Applications,Representing Relations,Closures of Relations,Equivalence Relations,Partial Orderings.
Graphs : Introduction,Graph Terminology,Representing Graphs and Graph Isomorphism,Connectivity,Euler and Hamilton Paths,Shortest – Path Problems,Planner Graphs,Graph coloring.
Trees: Introduction,Application of Trees,Tree Traversal,Spanning Trees,Minimum Spanning Trees.

Module 4: Boolean Algebra: Boolean Functions,Representing Boolean Functions,Logic Gates,Minimization of Circuits.
Modelling Computation : Language and Grammers,Finite-State Machines with Output,Finite-State Machines with No Output, Language Recognition,Turing Machines

Book:

1. "Discrete Mathematics and its Applications" By Kenneth H. Rosen.
2. C.L.Liu, "Elements of Discrete Mathematics", Mc Graw Hill International Student
   Edition.
3. Alan Doerr, Kenneth Levasseur, "Applied discrete structure for Computer Science", Galgotia Publication Private Limited.
4. N.Ch. S.N. Iyengar, Chankrasekaran, Venkatesh, Arunachalam, "Discrete Mathematics", Vikas Publication.

1st SEMESTER M.C.A.

F.M.- 70

MCA-104 **COMMUNICATIVE ENGLISH (2-0-0)Cr.-2**

Rationale/Objectives

This is a practice-oriented, need-based, functional-communicative course. It seeks to develop the student's skills of communication in listening, speaking and writing. Reading, though formally not included, is still a recommended activity. The student is advised to cultivate the habit of reading newspapers, magazines and books in a free, extensive manner to consolidate the skills already achieved. A more interactive process of teaching/learning is called for in order to achieve the skills of effective communication.

Specific Objectives

The course attempts to

a) Familiarize the student with the sounds of English in a nutshell, particularly long and short vowels, some consonants, stress and intonation.
b) Provide adequate listening and speaking practice so that the learner can speak with ease, fluency and reasonable clarity in common everyday situations and on formal occasions.
c) Use grammar in meaningful contexts.
d) Things with word, i.e. to perform functions like ordering, requesting, inviting and so on

Module 1: Communication

6. Verbal and non-verbal spoken and written
7. Language functions-descriptive, expressive and social
8. To inform, enquire, attract, influence, regulate and entertain
9. Bias-free and plain English
10. Formal and informal style

Module 2: Communicative Grammar

11. Time, tense and aspect
12. Verbs of states and events
13. Statements, questions and responses
14. Omission of information
15. Expressing emotion and attitude: hope, pleasure, disappointment, regret, approval, surprise.

Module 3: The Sounds of English

1.1 Length of vowels-Long vowels/ I:, a:,)., U:, 3: / as in feel , card, court, food and first respectively.
1.2 Short vowels / e, x, n / as in pen, bag, and sun respectively
1.3 Consonants / f, v, Q, x, s, z, ----------/ as in fine, vast, thought, them, sosng, zoo, shame, pleasure and judge respectively.
1.4 Stress pattern
1.5 Intonation-Rising and falling
1.6 Friendly communication-greetings, farewells, introductions, thanks, apologies, regrets, good wishes, congratulations, condolences, offers.

Module 4: Doing things with words

1.1 To ask for information, help, permission
1.2 To instruct, command, request, accept, refuse, prohibit, persuade, promise.

Books prescribed

1. Geoffrey Leech and Jan Svartvik, Longman, A communicative Grammar of English.
2. J.D.O'connor, Better English Pronunciation, Cambridge University Press.
3. J.K.Chand and B.C.Das, A Millennium Guide to writing and Speaking English, Friends' Publishers
4. John Sealy, Oxford Guide to Writing and Speaking, OUP.

1st SEMESTER M.C.A.

F.M. 70

MCA-105 **ENGINEERING ECONOMICS AND COSTING (3-1-0)Cr.-4**

Module 1:
Time Value of money, Interest formulae, Time Value equivalence, Present Worth, and Annual worth methods, Comparison of assets with equal, unequal and infinite lives. Internal Rate of Return.

Module 2:
Maintenance and Replacement decisions, Determination of economic life of assets, Concept of challenger and defender. Methods of depreciation of assets, Straight line and Declining balance method. Evaluation of Public Projects, Cost Benefit analysis.

Module 3:
Cost concepts and classification, Preparation of Cost Sheet, Process Costing, Joint product and By-product Costing, Marginal Cost, Limitation of Marginal Costing.

Module 4:
Methods of segregation of cost into fixed and variable cost, Break-even and cost volume-profit analysis, standard costing, Variance analysis, Reasons for variances, relevant costs and revenue, Outsourcing decision.

Text Books

1. Reggs., J.L.et al, McGraw Hill
2. Dutta, Manasha, Cost Accounting Principles & Practice Pearson

Reference:

1. Park, Chan. S, Contemporary Engineering Economics, PHI
2. Sullivan W.G. et at., Engineering Economics Person
3. Panneerselvam, Engineering Economics PHI
4. Bhattarya A.K.Principles and Practice of Cost Accounting PHI
5. Nigam & Jain Cost Accounting, PHI
6. Jain & Narang, Advanced Cost Accounting, Kalyani

1st SEMESTER M.C.A.

SESSIONAL

MCA-191 COMMUNICATIVE PRACTICE LABORATORY – I (0-0-2)Cr.-1

Some Tasks:

1. Make a list of nonverbal communication
2. How is body language casually conditioned?
3. Take passages of descriptive, expressive and social functions and analyse them.
4. Expressive (exposing feelings) language in English and your mother-tongue
5. Make a list of sexist language (e.g. poetess, chairman)
6. Mentally retarded should be replaced by mentally challenged. Make a list of similar expressions
7. Say formulas expressions (Thank you, sorry, hallo, that's right) with proper intonation.
8. Make a list of words which should be avoided because they sound pompous. Which words would you use instead of them.
9. How to express pleasure, regret, approval?
10. Time and tense are not the some. Give same examples.
11. Take similar vowels and consonants and practice them in pairs of words
12. Practice, stress and intonation in connected speech.
13. Conversation practice in familiar situations(Play the role of a tailor and a customer, for example)
14. Ask for specific information (can you tell me where the railway station is ?
15. Making a request (can I barrow your scooter, please?)
16. Asking for permission (Do you mind if I smoke?)
17. Say the following pairs of words
    a) Beg, bag, full, fool, sit, seat, same, shame, judge, jazz, major, measure.
    b) Progress as noun verbs, similarly, object, record, supplement, perfect (adj), perfect (v).
    c) Say the following words with correct stress. Teacher college, village, building, ago, above, apart, accuse, advice, education, examination, individual (The list is only illustrative and not exhaustive).

1st SEMESTER M.C.A.

SESSIONAL

MCA-192 **'C' PROGRAMMING Lab. (0-0-6)**

Introduction to OS: Linux/Unix, DOS, Windows,
Vi editor, Shell Programming (on Unix),
File handling, directory structures, file permissions, creating and editing simple C programme, compilation and execution

C programming on variables and expression assignment, simple arithmetic
Loops, If-else, Case statements, break, continue, go to
Single & Multidimensional arrays

Functions, recursion, file handling in C

Pointers, address operator, declaring pointers & operators on pointers

Address of an array, structures, pointer to structure, dynamic memory allocation

1st SEMESTER M.C.A.

SESSIONAL

MCA-193 **ASSEMBLY LANGUAGE PROGRAMMING Lab. (0-0-6)**

1. Verification on 8085 Instruction set.
2. Addition, Subtraction, Multiplication & Division of tow 8-bit numbers
3. Development of code conversion Programs:
   a) Binary to Gray
   b) Gray to Binary
   c) ASCII to Binary
   d) Binary to ASCII

4. Identification of the ports and pins of I/O ports of Intel 8255.
5. Generation of Square, Triangular and Sinusoidal waveforms using DAC.
6. Study of Interrupt RST 7.5.
7. Stepper Motor control using 8085 Microprocessor.