1st year MCA

Code No	Subject		Theory			Practical		
		Lecture	Credit	University	Internal	Hours/Week	Credit	Marks
		Hrs/ Week	Theory	Marks	Evaluation	L/T	Practical	
	Semester – 1							
NMCA 101	Problem Solving and Programming Using C	3	3	100	50	6	1	50
NMCA 102	Computer Organization and Architecture	3	3	100	50	2	1	50
NMCA 103	Business Information System	3	4	100	50			
NMCA 104	Computer Oriented Numerical Methods	3	4	100	50			
NMCA 105	Engineering Economics	3	3	100	50			
NMCA 106	Business Communication	3	3	100	50	2	1	50
TOTAL		18	20	600	300	10	03	150
Total Credits: 23								

1st Semester MCA

NMCA 101. PROBLEM SOLVING AND PROGRAMMING USING C

Module 1 (10 hours)
Introduction to Computers: Basic Organization of a Computer, Number System, Conversion.
Programming Basics: Algorithm, Flowchart, Structured Programming Approach, Structure of a C Program, Compiling, Linking and Executing Programs.
C Language Fundamentals: Character Set, Key Words, Identifiers, Data Types, Variables and Constants, Operators, Expressions, Type Conversions, Statements, Managing Console Input and Output Operations.
Control Structures: Decision Making and Branching - If and Switch, Loop Structures - While, Do While and For, Unconditional Jumps - Continue, Break and Go To.

Module 2 (10 hours)
Arrays: Concept, Declaration and Manipulation of Arrays, One Dimensional, Multidimensional Array and their Applications.
Strings: Concept of Strings, String Handling Functions, Array of Strings.
Pointers: Pointer Variable and its Importance, Dereferencing, Pointer Arithmetic and Scale Factor, Pointers and Arrays, Pointer and Strings, Array of Pointers, Pointers to Pointers.
Functions: Designing Structured Programs, User Defined and Standard Functions, Formal and Actual Arguments, Function Prototype, Parameter Passing, Functions Returning Multiple Values, Functions Returning Pointers, Pointers to Functions, Nesting of Functions, Recursion, Passing Arrays to Functions.
Scope and Extent: Scope Rules, Storage Classes - Auto, Extern, Register and Static.

Module 3 (10 hours)
Structures, Unions and Enumerations: Declaration and Initialization of Structures, Structure as Function Parameters, Structure Pointers, Unions, Enumerations.

Module 4 (10 Hours)
File Input and Output: Defining, Opening a File and Closing a File, Input/output Operations in Files, Random Access to Files, Error Handling.
Command Line Arguments, Dynamic Memory Management, Pre-Processor Directives.
Graphics using C programming.

Module 5 (6 Hours)(as per choice of faculty) Graphics using C.
Portion covered can be tested through Internal evaluation only not to be included in University examination)

Text Book:

1. PradipDey, ManasGhosh, “Programming in C”, First Edition,OxfordUniversity Press, 2011.
2. E. Balagurusamy, “Programming in ANSI C”, 4th edition, 2007, McGraw-Hill Publication, New Delhi.
3. Brian W. Kernighan, Dennis Ritchie, “The C Programming Language” (2nd Edition), 1988, Prentice Hall.
4. Yashavant P. Kanetkar. “Let Us C”, BPB Publications, 2011.

1. K.R. Venugopal, S.R. Prasad, “Mastering C”, McGraw-Hill Education India.
2. Byron S Gottfried, “Programming with C”, Schaum’s Outlines, Second Edition, Tata McGrawHill,2006.
3. Anita Goel and Ajay Mittal, “Computer Fundamentals and Programming in C”, Dorling

Kindersley(India) Pvt. Ltd., Pearson Education in South Asia, 2011.

NMCA 102 COMPUTER ORGANIZATIONS AND ARCHITECTURE

Module 1 (10 Hours)

Introduction: Basic architecture of computer, Functional units, Operational concepts, Bus structures, Von Neumann Concept.

Basic Processing: Instruction code, Instruction set, Instruction sequencing, Instruction Cycle & Execution Cycle, Instruction format, Addressing modes, Micro instruction, Data path and control path design, Micro programmed vs. Hardwired controlled unit, RISC vs. CISC.

Arithmetic: Design of ALU, Binary arithmetic, Addition and Subtraction of signed number, Multiplication of Positive number, Signed operand multiplication, Division, Floating point number representation and arithmetic.

Digital Electronics: Boolean algebra, Digital Logic, Truth Tables, K map, Number system, Flip - Flop

Module 2 (10 Hours)

Memory: Memory Hierarchy, RAM, ROM, Cache memory organization, Mapping techniques, Virtual memory, Memory Interleaving, Secondary Storage, Flash drives.

Module 3(10 Hours)

Input/output: Accessing I/O devices, I/O mapped I/O, Programmed I/O, Memory Mapped I/O, Interrupt Driven I/O, Standard I/O interfaces, Synchronous and Asynchronous Data transfer, DMA data transfer.

Introduction to Parallel processing: Flynn's Classification, Pipelining, Super Scalar processors, Array processing, vector processing.

Module 4 (10 Hours)

8085 Microprocessor and Assembly level Programming using 8085 microprocessor Module 5 (6 hours)(as per choice of faculty)

Portion covered can be tested through Internal evaluation only not to be included in University examination)

Text Books:

1. Mano.M. "Computer System and Architecture" (3rd Ed) (PHI).
2. Computer Architecture by Hwang and Briggs. (MGH).
3. Fundamentals of Computer Organisation by M V L N Raja Rao; Scitech publ.
4. Carl Hamacher, ZvonkoVranesic, SafwatZaky, "ComputerOrganization", 5th Edition,
   McGraw-Hill Education India

Reference Books:

1. William Stalling,"Computer Organization and Architecture", Pearson Education
2. J. P. Hayes, "Computer Architecture and Organization",MGH
3. A.S. Tananbaum, "Structured Computer Organization", Pearson Education

NMCA 103 BUSINESS INFORMATION SYSTEM

This course will give a high level understanding of what information is, what business is and how information is key to successful execution of a business. It will help understanding the evolution of information system from a traditional way of dealing with information to a level how information is a business enabler. It also covers the tools and techniques deployed to expedite the information processing and controlled dissemination of information.

Module 1(10 Hours)

Introduction to Business Information System: What is information and what is Business. Why information System, perspectives of information system, contemporary approaches to information system, Learning to use information system- key management issues.

Module 2 (10 Hours)

Information System in the enterprise: Major types of information system, systems from a functional perspective, integrating functions and business processes, Management opportunities, Challenges and Solutions

Module 3 (10 Hours)

Information systems, organizations, management and strategy: Organizations and information systems, how information system impact organizations and business firms, impact of IT on management decision making, management information system and business strategy, management opportunities challenges and solutions

Module 4(10 Hours)

The digital farm: Electronic Business and electronic commerce and digital farm, e-Commerce, e-Business and digital farm, management opportunities, challenges and solutions, ethical and social issues in digital farm, ethics in an information society, moral dimensions of information system.

IT infrastructure and Platforms: IT infrastructure, infrastructure component, contemporary hardware platform trend, contemporary software platform trends, organizing data in a traditional file environment, database approach to data management, Telecommunications, network and the internet, contemporary networking infrastructure, Internet, social media.

Module 5 (6 Hours) (as per choice of faculty)

Portion covered can be tested through Internal evaluation only not to be included in University examination)

MS Suit of products (Excel, Access, Power-point) covering information extraction using Scenarios, Pivot, Macros. Animated presentations, small scale database design and reporting.

References

1. Management Information Systems by Kenneth C Laudon- Prentice Hall.
2. Business Information Systems by Robert C Nickerson, Prentice Hall

NMCA 104 COMPUTER ORIENTED NUMERICAL METHODS

Module 1(10 Hours)
Computing Arithmetic, Significant Digits and Numerical Instability, Root finding methods-Bisection, Newton Raphson, Secant and RegulaFalsi, methods for multiple roots.

Module 2 (10 Hours)
System of Linear Algebraic Equations and Eigenvalue problems-Gauss Elimination, LU Decomposition- Jacobi-Gauss-Seidel and SOR methods, Interpolation and Approximation-spline approximation- Linear, quadratic and Cubic,

Module 3 (10 Hours)
Differentiation and Integration-Richardson's extrapolation, Gauss Quadrature methods, ordinary differential equations-Initial and Boundary Value Problems, introduction to numerical solutions of Partial Differential Equations.

Module 4 (10 Hours)
Flowchart and Algorithms and programming in C implementations.

Module 5 (06 Hours)
(as per choice of faculty)
Portion covered can be tested through Internal evaluation only not to be included in University examination)

References:

1. Numerical Methods for Scientific and Engineering Computation by M.K. Jain, SRK Iyengar and R.K.Jain
2. Numerical Methods for Engineers by S.C. Chopra and Raymond P. Canale
3. Introductory Methods of Numerical Analysis by Sastry
4. Numerical Analysis by E.W. Cheney and D.R.Kincaid

NMCA 105 ENGINEERING ECONOMICS

Module 1 (8 Hours)
Introduction to Economics: definition, scope and nature of economics, consumption laws, demand & supply analysis, elasticity of demand, indifference curve analysis, consumer surplus and its application.

Module 2 (10 Hours)
Production : factors of production, production function, law of variable proportion, laws of return to scale, elasticity of factor-substitution, optimal combination of factor-inputs, production efficiency, economies of scales,
Cost of Production: types of costs, economic costs: fixed cost and variable costs, Average and Marginal costs, short-run and long-run cost functions.

Module 3 (10 Hours)
Market Structure: pure competition, perfect competition, imperfect market, monopoly and oligopoly. Indian Banking System, Functions and Roles of Commercial Banks and Reserve Bank of India.

Module 4 (12 Hours)
Foundations of Engineering Economics, Time value of money and interest formulae, Nominal and effective rate of interest, Present, Annual and Future worth analysis, Rate of Return Analysis, Cost-Benefit analysis in Public sector projects. Module 5 (06 Hours)(as per choice of faculty)
Portion covered can be tested through Internal evaluation only not to be included in University examination)

References:

1. Koutsoyiannis, A., 'Modern Microeconomics', English Language Book Society, Macmillan.
2. Pindyck, R S, Rubinfeld, D L &Mehta , 'Microeconomics', 6 th Edition, Pearson Education India.
3. Varian, H R, 'Intermediate Microeconomics', 7th edition, East West Press India.
4. Samuelson, Paul A, 'Economics', 5th edition, McGraw Hill New York.
5. Basics of Engineering Economy; Leland Blank and Anthony Tarquin, TMH
6. Contemporary Engineering Economics, Chan. S Park, Pearson
7. Engineering Economics, Paneerselvam, PHI
8. Engineering Economics; Sasmita Mishra, PHI

NMCA 106 BUSINESS COMMUNICATION

Objectives:
To develop communication skills and soft skills of students
To enhance the ability of students to participate in group discussions and personal interviews

Module 1 (10 Hours)
Introduction to Business Communication: Meaning, importance, the process of communication, principles of communication, verbal and non-verbal communication, barriers to communication, channels of communication, cross cultural communication.Difference between Professional and General communication.

Module 2 (10 Hours)
Functional Grammar: Verbs, Tense, Voices, Negation and interrogation, conditionals, concord, phrasal verbs, direct and indirect speech, Elimination of common errors.

Module 3 (10 Hours)
Paragraph Writing, Business Letters, Job Application Letters, Resume Reports – Types, Format, Choice of Vocabulary, Coherence and Cohesion Proposals: Purpose, Characteristics, Types, Structure

Module 4 (10 Hours)
Oral Presentations, Interviews, Group discussion, Soft Skills, Business Etiquette Module 5 (06 Hours)(as per choice of faculty)
Portion covered can be tested through Internal evaluation only not to be included in University examination)

Value-based Text Reading:

A. Study of the following essays from the text book with emphasis on writing skills:
1. Man and His Environment by Robert Arvill
2. The Language of Literature and Science by Aldous Huxley
3. Humanistic and Scientific Approach to Human Activityn by Moody E Prior
4. Gods in this Godless Universe by Bertrand Russell
5. Religion- An Inevitable Part of Human Life by J Milton

Yinger B. Readings of selected short stories:
1. The Renunciation by Rabindranath Tagore
2. The Lament, by Anton P. Chekhov
3. The Barber's Trade Union by Mulk Raj Anand
4. The Eyes Are Not Here by Ruskin Bond

1. Business Communication Today; Bovee et al, Pearson
2. Business Communication, Meenakshi Raman and Prakash Singh, Oxford
3. Improve Your Writing' ed. By V N Arora and Laxmi Chandra, Oxford University Press, New Delhi
4. Technical Communication- Principles and Practices' by M R S Sharma, Oxford University Press, New Delhi.

Practical

NMCA 101 PROGRAMMING IN C LABORATORY

1. Find Area, Perimeter of Square & Rectangle.
2. Find max. Among 3 nos.
3. Check leap year
4. Factorial of Number
5. Calculate a b
6. Prime Number.
7. Perfect Number.
8. Armstrong Number.
9. Floyd's Triangle
10. Fibonacci Series
11. Inter conversion of Decimal, Binary & Hexadecimal no.
12. LCM & GCD of numbers
13. Insert & Delete an element at given location in array.
14. Transpose of matrices
15. Multiplication of matrices
16. Display upper & lower diagonal of matrices
17. Array of Structure e.g. student result, Employee pay slip , Phone bill
18. Function with no parameter & no return values
19. Function with parameter & return values
20. Function with parameter & no return values
21. Function with call by reference
22. Recursion function e.g. sum of digit, reverse of digit
23. String manipulation function e.g. string copy, concatenation, compare, stringlength, reverse
24. Pointer Arithmetic
25. File handling e.g. Read / Write file, copy file, merging file
26. Random access of file
27. File handling with command line arguments
28. Drawing line, rectangle, circle, ellipse by using graph
29. Changing foreground/ background color
30. Changing color & font of text
31. Swapping of numbers by using bit wise operator.
32. Macro expansion
33. File Inclusion
34. IO interfacing & Device Driver using C.
35. Graphics using C

NMCA 102 COMPUTER ORGANIZATIONS AND ARCHITECTURE (LAB)

I–CYCLE: DigitalLogicDesignExperiments:

1. Multiplexers & Decoders
2. Counters
3. Shift Registers
4 Binary Adders&Subtractors
5 A L U

II–CYCLE: 8085AssemblyLanguageProgramming:

1. 8085AssemblyLanguageProgrammingaccordingtotheorycourse microprocessors-usingthefollowingtrainers:KeyboardMonitorof8085µPTrainer.SerialMonitorof8085µPTrainer withTerminal
8085LineAssemblerof8085µPTrainerwithPCasTerminal8085CrossAssemblerusingInCircuit Emulator(ICE)with8085µPTrainerandPCasTerminalGradedProblemsaretobeusedaccordingt othesyllabus.

2. COMPUTER ORGANIZATION

PentiumclassPCarchitecturefamiliarizationhardware&softwarepartsdemonstration, Troubleshooting of PC,Laptops, Server and Loading of Operating System, Antivirus and other software packages

NMCA 106 BUSINESS COMMUNICATION LABORATORY

Describe the communication process and the major types of written, verbal, and nonverbal communications used in business and professional communication.
Demonstrate the ability to compose a letter or memo using clear, concise language as required for a defined audience.
Demonstrate the ability to communicate a variety of types of business messages that may include good news, unfavorable news, persuasive messages, sales messages, or general information.
Compose business reports or proposals that demonstrate the ability to gather, organize, and present information.
Demonstrate the ability to prepare and deliver an oral business presentation in a clear, confident, and effective manner, with visual aids (if needed).
Discuss the interpersonal communication skills needed to build interpersonal cooperation in the business environment including meetings and work teams.
Discuss the communication principles and processes that improve the effectiveness of an organization's communication climate.
Describe strategies for communicating across cultures.

COURSE/LAB OUTLINE

1. Understanding business communication
2. Work-team communication
3. Communication technology
4. Developing business writing skills
5. Writing basic correspondence (routine, persuasive, and bad-news messages)
6. Report writing
7. Oral and employment communication