INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE

MCA (6 Years)

V SEMESTER

JULY-DECEMBER 2012

Sub. Code	Sub. Name	Credit
IC-501	AFM-II	4
IC-502	Micro Processor and Assembly Language	4
IC-503	Computer Graphics	4
IC-504	System Programming	4
IC-505	Numerical Analysis and Design	4
IC-506	Computer Lab	2
IC-507	Electronics Lab	2
IC-508	Comprehensive Viva	4

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (6 Years) V SEMESTER
IC-501: Accounting & Financial Management – II

Aim of Course: Aim of Course: To give an in-depth knowledge of all business transactions and how they should be recorded, classified & interpreted to get a meaningful judgment of viability & profitability of the industry.

Objectives:

The course is designed to make students:

- Be able to prepare a set of financial statements for various forms of businesses and non-profit entities.
- Develop an ability to apply accounting concepts, principles and practices.
- Be familiar with the basic tools for analyses of financial statements.

Course Contents:

UNIT I

Scope of Financial Management, Time value of money: Introduction to various sources of finance Leverages-Meaning of leverage, Significance of operating & financial Leverage.

UNIT II

Capital Structure: Meaning of capital Structure Different Capital Structure Theories.

UNIT III

Working Capital Management: Concept of Working Capital, Management of cash Management of Inventories, Management of Account Receivable Management, Accountants Payable Over Trading & Under Trading.

UNIT IV

Long term investment Decision: Capital Budgeting ,Cost Volume Profit Analysis.

UNIT V

Marginal Costing Introduction to marginal costing, Decision making in alternative. Choices. Dividend Policy in Practice

Reference Books:

1. Dr. S. N. Maheshwari , Financial Management: Principles & Practice

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IC-502: Microprocessor & Assembly Language

Aim of Course: To introduce the basic concepts of microprocessor and assembly language programming.

Objectives:

The course is designed to make students:

- Develop an understanding of the operation of microprocessors.
- Learn assembly language programming.
- Learn the internal organization of some popular microprocessors.

Course Contents:

UNIT I

Microprocessor–Based Systems: Hardware and Interfacing: Microprocessors, Microcomputers and Assembly Language8085 Architecture & Memory Interfacing I/O Devices.

UNIT II

Instruction Set and Addressing modes: Data transfer, Arithmetic, Logical, Branch & Machine control instructions, related programs & Addressing modes.

Additional Programming Techniques and Stack Operations: Subroutine, Counters & time delay, Code conversion, BCD arithmetic, 16 bit data operation.

UNIT III

Interrupt & Interfacing some peripheral I/O: Interfacing data converters, Programmable Interface Devices: 8155 I/O and Timer, 8279 Keyboard / Display interface.

UNIT IV

General purpose programmable peripheral devices: 8255 (Bidirectional data transfer between two computer) 8254 (Programmable Interval Timer)8259A Interrupt Controller8237 DMA, Serial I/O Communication.

UNIT V

Other eight bit, sixteen-bit Microprocessor: Z80, MC 6800Introduction to advance Microprocessor: 8086,80286,80386Microcontroller 8051.

Reference Books:

1. R.S. Gaonkar, Microprocessor Architecture Programming and Application of 8085.
2. Shridhar and Ghosh, 0000 to 8085 Microprocessor.
3. Intel Corporation, Microprocessors and peripheral hand book.

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IC-503: Computer Graphics

Aim of Course: To provide a broad exposure to the computer graphics field and understand the development of computer graphics applications.

Objectives:

The course is designed to make students:

- Understand basics of computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.
- Understand computer graphics techniques, and concepts including geometric transformations, geometric algorithms, 3D object models (surface, volume and implicit), morphing, and anti-aliasing.
- The interdisciplinary nature of computer graphics is emphasized in the wide variety of examples and applications.
- To provide a broad exposure to the computer graphics field and understand the development of computer graphics applications using multimedia tools and techniques.

Course Contents:

UNIT I

INTRODUCTION: Application of Computer graphics, Raster Graphics, Fundamentals: Scan Conversion, Pixel, Frame Buffer. GRAPHICS PRIMITIVES; Line algorithms, Circle algorithms, Ellipse, Character generation, Polygon representation, Inside test. Polygon filling algorithms, Antialiasing.

UNIT II

DEVICES: Display devices: Random scan and raster scan monitors. Color CRT monitor, Plasma panel, Hard copy devices: Printers and Plotter: Input devices Joysticks, Mouse, Digitizer, Scanner, Camera

UNIT III

WINDOWING & CLIPPING: Window, View port Line Clipping algorithms, Polygon clipping algorithms, Window & View port Transformation, Display file Concepts & Segmentation: Display file. Segment table, segment display file. INTRACTIN: Locator & Selector devices. Interactive picture construction techniques – modular Constraint, rubber band, gravity field.

UNIT IV

THREE DIMENSIONS: 3D Geometry, 3D Modeling techniques, #D Display Techniques: Parallel Projection, Perspective Projection. Transformation, Viewing Parameter. HIDDEN SURFACE REMOVAL: Back face Removal Algorithms, Z Buffers algorithms, scan line algorithms, Painter's algorithms.

UNIT V

SHADING AND COLOR MODELS. Diffuse illumination, Point source illumination Specular reflection, Refraction Shadows, Color models, Dithering, Half toning.

CURVES AND SURFACES: B_Spline, Bezier curves, Fractals

Reference Books:

1. Donald Hearn and M.Pauling Baker, Computer Graphics, Prentice Hall of India.
2. David F. Rogers, Procedural Element of Computer Graphics, McGraw Hill International.
3. William M. Newman Robert F. Sproull, Principles of interactive computer Graphics,

McGraw Hill International.
4. Foley, Computer Graphics, Addison Wesley Longman

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IC-504: System Programming

Aim of Course: To enhance the understanding of the concepts of System Programming and to provide a basis for judgment in the design of System Software - Preprocessors, Compilers, Loaders, Debuggers, and Assemblers

Objectives:

The course is designed to make students:

- Understand basic concepts of system software and system programming.
- Learn the design of assemblers, compilers and preprocessors.
- Understand the working of loaders, linkers, editors, debuggers and other software tools used in programming development environment.

Course Contents:

UNIT I

Introduction to Software: System Software and Application Software, System Programming, Components of Language Processing System, Fundamentals of Language processing systems.

UNIT II

Assembler: Elements of Assembly Language programming, a simple Assembly Scheme, Pass Structures of Assemblers, Design of a Two-pass Assembler, A Single pass Assembler for IBM PC.

UNIT III

Macros and Macro Processors: Macro definition and call, macro expansions, nested macro calls, Advance Macro facilities, Design of Macro Preprocessor and macro Assembler.

UNIT IV

Compiler: Compiler and Translators, cross compilers, phases in complier Design, design of Lexical analyzer.

UNIT V

Loaders and Linkers: Loader Schemes- Link and Go, Link-load and Go, General loader scheme, Absolute loaders, Subroutine linkage, Relocating loaders. Other loader schemes:- Binders, Linkers, loaders, Re-locatable and self-relocating programs.

Software Tools: Software tools for program development, Editors, Debugger, Programming Environments, User Interfaces, Co-routines and reentrant programs.

Reference Books:

1. D. M. Dhamdhere, System Programming and Operating System, 5th edition
2. John. J. Donovan, System Programming, Tata McGraw Hill.
3. Aho and Ullman , Principles of Compiler Design, Pearson Education.
4. Leland L. Beck, “System Software An Introduction to Systems Programming”, Pearson Education 3rd Edition.
5. Dougles. V. Hall , “Microprocessors and Interfacing”, Tata McGraw Hill.
6. Assembly Language Techniques for IBM PC, BPB Publication, Alan R. Millar

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IC-505: Numerical Analysis & Design

Aim of Course: To teach basic numerical methods required for typical engineering and business applications.

Objectives:

The course is designed to make students:

- Understanding the properties of different numerical methods so as to be able to choose appropriate methods and interpret the results for engineering problems that they might encounter.
- Find numerical approximations to the roots of an equation by Newton method, Bisection Method, Secant Method, etc.
- Use finite differences for interpolation and learn various interpolation methods.
- Understand numerical integration and differentiation.

Course Contents:

UNIT I

Introduction: Types of error. Computer Arithmetic operation on floating point number, Solution of Transcendental and Algebraic equation, Zeros of a polynomial, Bisection method, False-Position method, Newton Raphson method.

UNIT II

Introduction to Interpolation:-Finite Differences, Forward, Backward and Central differences, Differences of a polynomial, Newton's formula for interpolation, Related numerical. and derivation, Gauss's central differences formula, Related numerical and derivation. Interpolation with unevenly spaced points. LaGrange's interpolation. derivation and numerical. Hermite's methods for interpolation. Derivation and numerical, divided differences and theirs properties, Newton's general interpolation formula, Inverse interpolation, Method of successive approximations, Extrapolation.

UNIT III

Numerical integration and Differentiation:- Introduction to Numerical Integration, Area bounded by a curve, General Formula for Integration, Trapezoidal rule, Simpson's 1/3 rule, Simpson's 3/8 rule.

UNIT IV

Numerical and C Programs based on above methods:- Geometrical interpretation of above methods. Newton-Cotes Integration formula. Gaussian Integration. Solution of differential equation, Runga Kutta methods.

UNIT V

C implementation of other methods:-Simultaneous Linear Equations, Solution of simultaneous linear equations, Gauss elimination and pivoting, Ill conditioned equation and refinement of solution. Gauss Seidal iterative Methods.

Reference Books:

1. S. S. Shastri, Numerical Methods (Text Book 1 for Numerical Methods)
2. Rama N. Reddy and Carol a.Zieglar, C77 (Text Book 2 for C)
3. V.Rajaraman, Computer Oriented Numerical Methods
4. Veda Murthi and Iyenger, Numerical methods.
5. Krishna Murthi, Numerical Analysis.

6. Gupta and Malik, Numerical Methods.