

Academic Syllabus :

P.E.S COLLEGE OF ENGINEERING, MANDYA - 571401
(An Autonomous Institution Under VTU Belgaum)
SCHEME OF TEACHING AND EXAMINATION (2008)
I SEMESTER MCA (Master of Computer Applications)

Sl. No	Course Code	Course Title	Credit L : T : P	Total	Examination		
					Marks		
					CIE	SEE	Total
1	P08MCA101A	Mathematics	4:1:0	5	50	50	100
2	P08MCA101B	Accounting & Financial Management	4:0:1	5	50	50	100
3	P08MCA102	Discrete Mathematical Structures	4:1:0	5	50	50	100
4	P08MCA103	Fundamentals of Computer Organization	3:1:1	5	50	50	100
5	P08MCA104	Problem Solving Using C	3:1:1	5	50	50	100
6	P08MCA105	Professional Communication & Ethics	4:1:0	25	250	250	500
		Total		25	250	250	500

* L: Lecture T: Tutorial P: Practical

I Semester Master of Computer Applications

Mathematics

Course Code : P08MCA101A
Total Hours : 52

Credit : 4:1:0=5
CIE:50 SEE:50

1. Complex Trigonometry

12 Hrs

Revision of plane trigonometry- trigonometrical ratios, expressions for relation between allied angles and trigonometrical ratios, addition formulae for trigonometrical ratios and Simple problems, Complex numbers and functions-definition, properties, De Moivre's theorem (without proof), Roots of a complex number, expansions of $\sin(nA)$, $\cos(nA)$ in powers of $\sin A$ and $\cos A$, addition formulae for any number of angle.

2. Linear Algebra

10 hrs

Introduction, types of matrices, determinant of a matrix, elementary row operations, row echelon matrix, rank, consistency of a system. Eigen values and Eigen vectors, CayleyHamilton theorem (without proof)-inverse of matrix and related problems

3. Differential Calculus

14 Hrs

Limits, continuity and derivative of a function (definition only), rules of differentiation, derivatives of (i) Standard functions, (ii) function of a function and (iii) parametric form functions. Successive differentiation, Polar forms, angle between the radius vector and the tangent to a polar curve(no derivation), angle between the curves, pedal equation, intermediate forms, L'Hospital rule.

4. Integral Calculus

10 Hrs

Introduction, integration by substitution and by parts, integration of rational, irrational and trigonometric functions, reduction formulae (no derivations), definite integrals, integrals

5. Differential Equations of First order

6 Hrs

Introduction, solution by separation of various method, homogeneous equations, reducible to homogeneous form, linear equations, Bernoulli's equation, exact differential equations and simple problems.

Text Books:

- 1.Higher Engineering Mathematics, Dr. B.S Grewal, 36th Edition, Khanna Publications, 2001.
Chapters: 2.1 to 2.2, 2.5 to 2.6, 2.9, 2.11, 2.14, 2.16, 4.1 to 4.2, 4.4 to 4.5, 4.7 to 4.8, 4.10 to 4.11,6.1 to 6.8,11.1 to 11.11, 17.1, 17.5 to 17.6, 19.1 to 19.9.
- 2.Elementary Engineering Mathematics, Dr. B S Grewal, 11th Edition, Khanna Publications, 2002.

Accounting and Financial Management

Course Code : P08MCA101B

Total Hours : 52

Credit : 4:0:1=5

CIE:50 SEE:50

1. Financial Accounting

6 Hrs

An Overview - Accounting Concepts. Principles & Standards, Journals, Ledger Posting, Trial Balance

2. Final Accounts

8 Hrs

Trading Account, Profit and Loss Account, Balance sheet(Simple Problems)

3. Financial Statement Analysis

8 Hrs

Financial statements - Introduction, Uses of Financial Analysis, Nature of Ratio Analysis, Liquidity Ratios, Leverage Ratios, Activity Ratios, Profitability Ratios, Du Point Analysis

4. Funds Flow and Cash Flow statements

6 Hrs

Meaning, uses, and limitations of Funds Flow and Cash Flow Statements, Preparation of Funds Flow and Cash Flow Statements (Simple problems).

5. Fundamentals of Cost Accounting

4 Hrs

Nature of Cost Accounting, Objectives, Advantages of Cost Accounting, Methods of Costing, Types of costing, Elements of Cost, Fixed, Variable and Mixed cost, Cost Sheet or Cost Statement.

6. Variable(Marginal)Costing and Profit Planning, Budgetary Control

10 Hrs

Costing, Marginal Costing, Differences between Absorption Costing and Marginal Costing, CVP Analysis, Break-even analysis, Break-even Chart, Utility of CVP Analysis, Budgetary control - Meaning, Budgetary control as a management tool, Limitations, Classification of Budgets, Fixed and Flexible Budgets.

7. Working Capital Management

4 Hrs

Concept of Working Capital, Determinants of Working Capital, Estimating Working Capital Needs,

8. Capital Budgeting

6 Hrs

Nature of Investment Decisions, Investment Evaluation Criteria, Capital Budgeting Process, PBP, ARR, NPV, PI, IPR, NPV vs. IRR.

Text books:

1. Accounting for Management, Jawahar Lal, 4th Edition, Himalaya Publishing, 2006.
Chapters: 1,2,3,4,5,6,7,10,11,12,13,24,25,27
2. Financial Management, I M Pandey, 9th Edition, Vikas Publishing, 2005.
Chapters: 8, 25, 27

Reference Books:

1. Financial and Management Accounting, S N Maheshwari, SultaChand & Sons, 2005.
2. Accounting for Management, Richard M Lynch, and Robert' W Williamson, 3rd Edition, Tata McGraw Hill, 2006.
3. Accountancy, Sukhla Grewal, 1st Edition, Sultan Chand & Sons, 2007.
4. Advanced Accounting, R Gupta and Radha Swamy, 10th Edition, Sultan Chand & Sons, 2001.

Discrete Mathematical Structures

Course Code : P08MCA102

Total Hours : 52

Credit : 4:1:0=5

CIE:50 SEE:50

1. Sets, Proof Templates, and Induction

10 Hrs

Basic Definitions, Operations on Set the Principles of Inclusion and Exclusion, Mathematical Induction, Exercises

2. Formal Logic

8 Hrs

Introduction to propositional logic, Truth and logical truth, Normal Forms, Predicates and Quantification, Exercises

3. Relations

6 Hrs

Binary Relations, Operations on binary relations, special types of relations, Equivalence relations, ordering relations

4. Ordered Sets and Lattices

6 Hrs

Introduction, Ordered sets, Hasse-diagrams of partially ordered sets, consistent enumeration, supremum and infimum, Isomorphic ordered sets. Well-orders sets, Lattices

5. Functions

8 Hrs

Basic Definitions, Operations on functions, sequences and sub sequences, The Pigeon-Hole principle, Countable and uncountable sets, Exercises

6. Graph Theory

10 Hrs

Introduction, Data structures, Graphs and Multi graphs, Sub graphs, Isomorphic and homomorphic graphs, Paths, Connectivity, The bridge of Konigsberg, traversable multi graphs, labeled and weighed graphs, complete, regular and biperted 'graphs, tree graphs, planar graphs, graph coloring, representing graphs in computer memory, graph algorithm .

7. Algebraic Systems

4 Hrs

Introduction Operations, Semi groups, groups, sub groups, normal sub group and homomorphism.

Text Books:

1. Discrete Mathematics and Computer Science, Gary Haggard, John Schlipf, Sue Whitesides, 1st Indian Edition, Thomson, 2007. Chapters: I, 2, 6:
2. Discrete and Combinatorial Mathematics an Applied Introduction, Ralph P. Grimaldi, 4th Edition, Pearson Education, 2003. Chapters: 5.1 to 5.6, 7.1 to 7.4, 16.1 to 16.3.

Reference Books:

1. Discrete Mathematics and its Applications, Kenneth H. Rosen, 5th Edition, Tata McGraw Hill Publications, 2003.
2. Discrete Mathematics with Graph Theory, Edgar G Goodaire, and Michael M Paramenter, 3rd Edition, Pearson Education, 2002.
3. Discrete Mathematics, Semyour Lipschutz, Marc Lipson, 2nd Edition, Tata McGraw-Hill, 2006.
4. Discrete Mathematical Structures: Bemad Kolman, Robert C Busby, 4th Edition, Pearson Education, 2000.

Fundamentals of Computer Organization

Course Code : P08MCA103

Credit : 3:1:1=5

Total Hours : 39

CIE:50 SEE:50

1. Number Systems and Logic Gates

5 Hrs

Counting in Decimal and Binary, Place Value, Binary to Decimal Conversion, Decimal to Binary Conversion, Hexadecimal Number Octal Numbers, Bits, Bytes, Nibbles, and Word Size, The AND Gate, The OR gate, The inverter and Buffer, The NAND gate, the NOR Gate, The exclusive OR gate, The Exclusive NOR Gates, The NAND Gate as an universal Gate, Gates with More than two inputs, Using Inverters to convert gates.

2. Combining Logic Gates and Arithmetic Circuits

8 Hrs

Constructing Circuits from Boolean Expression, Drawing a circuit from a Maxterm Boolean Expression, Truth Tables and Boolean Expressions, Sample Problem Simplifying Boolean Expression, Karnaugh Maps, Karnaugh Maps with three variables, Karnaugh Maps with four variables, more Karnaugh Maps, using Demorgan's Theorem, Binary Addition, Half Adders, Full Adders, Three Bit Adders, Binary Subtraction, Parallel Subtractors, IC Adders, Binary Multiplication, Binary Multipliers, 2's Complement Notation, Addition and Subtraction, 2's Complement adders/subtractor

3. Basic Structure of Computer

3Hrs

Computer Types, Functional Units, Basic Operational Concepts, Bus structures, Performance.

4. Machine Instruction and Programmes

6 Hrs

Memory Location and Addresses ,Memory Operations, Instructions & instruction Sequencing,

Addressing Modes, Assemble. Language, Basic Input/Output Operations

5. Input/Output Organization **7 Hrs**

Accessing I/O Devices, Interrupts, Direct Memory Accesses, Buses 240, Interface Circuits

6. Memory Systems **7 Hrs**

Some Basics concepts, Semiconductors RAM Memories, Read-Only Memories, Cache Memories,

Virtual Memories :Booth Algorithm.

7. Arithmetic Unit **3 Hrs**

Addition & subtraction of Signed Numbers, Multiplication of Positive Numbers, Signed-Operand Multiplication, Integer division.

Text Books:

1. Digital Electronics Principles and Applications, Tokheim, 6th Edition, McGraw Hill, 2004.
Chapters: 2.1 to 2.4, 2.6 to 2.8, 3.1 to 3.10, 4.1 to 4.9, 4.16, 10.1 to 10.11.
2. Computer Organization, Carl Hamacher, Z Vamesic and S Zaky, 5th Edition, McGraw Hill, 2002.
Chapters: 1.1 to 1.4, 1.6, 2.2 to 2.7, 4.1, 4.2, 4.4 to 4.6, 5.1 to 5.5, 5.7, 6.1 to 6.7

Reference Books:

1. Digital Logic and Computer Design, Morris Mano, Pearson Education Asia, 2002.
2. Logic and Computer Design Fundamentals, Morris Mano, and Charles R Kime, 2nd Edition, Pearson Education Asia, 2001.

Problem Solving Using C

Course Code : P08MCA104

Total Hours : 39

Credit : 3:1:1=5

CIE:50 SEE:50

1. Algorithms and Flowcharts **2 Hrs**

The meaning of algorithms. Flowcharts and their need, Writing algorithms and drawing flowcharts for simple exercises like finding biggest of three numbers, to find roots of given quadratic equation, to find the biggest and smallest of given set of numbers and such other simple examples

2. Constants, Variables and Data Types **3 Hrs**

Character set, C tokens, keywords & identifiers, structure of C program, executing a C program. Constants, variables, data types, declaration of variables, declaration of storage classes, assigning values to variables defining symbolic constants declaring a variable as constant; declaring a variable as volatile, overflow and underflow of data.

3. Operators and Expressions, **3 Hrs**

Arithmetic operators, relational operators, logical operators, assignment operator, increment and decrement operator conditional operator, bitwise operators, comma operator, special operators, arithmetic expressions, evaluation of expressions; precedence of arithmetic operators, type conversions in expressions, operator precedence and associativity, mathematical functions

4. Managing Input and Output Operations **3 Hrs**

The `scanf()` & `printf()` functions input and output operations, reading a character, writing a character, (the `getchar` & `putchar` functions) , the address operator(&), formatted input and output using format specifiers, Writing simple complete C programs.

5. Control Statements **2 Hrs**

Decision making with *if* statement, simple if statement, the *if else* statement, nesting of *if/else* statements, the *else..if ladder*, the *switch* statement, the ?: operator, the *goto* statement, the break statement, programming examples

6. Loop Control Structures **2Hrs**

The while statement, the do .. while statement, the for statement, nested loops, jumps in loops, the continue statement, programming examples

7. Arrays **3 Hrs**

The meaning of an array , one dimensional and two dimensional arrays, declaration and Initialization of arrays , reading , writing and manipulation of above types of arrays, Multidimensional arrays, Dynamic arrays , programming examples.

8. Character Arrays and Strings **3 Hrs**

Declaring and initialing string variables, reading string from terminal, writing string to screen, arithmetic operations on characters, putting strings together, comparison of two strings, string handling functions, table of strings, other features of strings, programming examples.

9. User Defined Functions **5 Hrs**

Need for user defined functions, a multi function program, elements of User defined functions, defining functions, return values and their types, function calls, function declaration, category of functions, no arguments and no return values, arguments but no return values, arguments with return values, no arguments with return value, functions that return multiple values, nesting of functions, recursion, passing arrays to functions, passing string to functions, programming examples.

10. Structures and Unions, **3 Hrs**

Defining a structure, declaring structure variables, accessing structure members, structure initialization, copying and comparing structure variables, operations on individual members, array of structures, structures within structures, structures and functions, Unions, size of structures, bit fields, programming examples

11. Pointers **4 Hrs**

Understanding pointers, accessing the address space of a variable, declaring and initialization pointer variables, accessing a variable through its pointer, chain of pointers, pointer expressions, pointers and arrays, pointer and character strings, array of pointers, pointer as . function arguments, functions returning pointers, pointers to functions, pointers and structures, programming examples

12. File Management in C

4 Hrs

Defining and opening a file, closing a file, input/output operations on files, error handling during I/O operations, random access files, command line arguments, programming. examples,

13. The Preprocessor

2 Hrs

Introduction, macro substitution, files inclusion, compiler control directives, ANSI additions, programming exercises.

Text Books:

1. Programming in ANSI C. Balaguruswamy, 3rd Edition, Tata McGraw Hill, 2003.
Chapters: 2,3,4,5,6,7,8,9,10,11,12,13.1 to13.6, 14.
2. Computer Programming in C, V Rajaraman, Prentice Hall India, 2000.
Chapters: 1.1,1.3,2.1,2.3,3.1,3.2,3.3

Reference Books:

1. Structured Programming Approach C, Bebrouz A Forouzan and Richard F Gilberg, 2nd Edition, Thomson, 2001.
2. How to Solve it by Computer, R G Dromey, Prentice-Hall India, 1982.
3. Beginning C: From Novice to Professional, Ivor Horton, 4th Edition, Springer, India, 2006.
4. Programming with ANSI and Turbo C, Ashok N Kamthane, 1stEdition, Pearson Education Asia, 2002.
5. Mastering C, K R Venugopal, S R Prasad, Tata McGraw Hill, 2006.

Professional Communication and Ethics

Course **Communication** **5 Hrs**
Code :
P08MCA105

Credit :
4:1:0=5
Total Hours
: 52

CIE:50
SEE:50

1.
Professional/Tec
hnical
Communication
- Basics of
Technical

Introduction, Process of Communication, Language as a Tool, Levels of Communication, Levels of Communication, Communication Networks, Importance of Technical communication

2. Barriers to Communication 3 Hrs

Definition of Noise, Classification of Barriers

3. Technology in Communication 4 Hrs

Impact of Technology, Software for Creating Messages, Software for Writing Documents, . Software for Presenting Documents, Transmitting Documents, Effective use of Available Technology

4. Active Listening 3 Hrs

Introduction, Types of Listening, Traits of good Listener, Active versus passive listening

5. Effective Presentation Strategies **5 Hrs**

Introduction, Defining purpose, Analyzing Audience and Locale, Organizing Contents, preparing outline, Visual Aids, Understanding Nuances of Delivery, Kinesics, Proxemics, . Paralinguistic's, Chronemics, Sample speech

6. Group Communication **5 Hrs**

Introduction, Group Discussion, Organizational Group discussion, Group discussion as part of selection process Meetings, conferences.

7. Research Paper, Dissertation and Thesis **4 Hrs**

Introduction , Research paper Dissertation , Thesis

Ethics:

1. An Overview of Ethics **3 Hrs**

What are Ethics? Ethics in the Business World, Ethics in Information Technology (IT)

2. Ethics for IT Professionals and IT users **4 Hrs**

IT professionals, The Ethical behavior of IT professionals, IT Users

3. Privacy **3 Hrs**

Privacy Protection and the Law, Key Privacy and Anonymity Issues

4. Software Development **3 Hrs**

Strategies to Engineer Quality s/w, Key Issues

5. Employer/Employee Issues **3 Hrs**

Use of Non traditional workers, Whistle Blowing

6. Case studies and Discussion **7 Hrs**

Text Books:

1. Technical Communication - Principles and Practices, Meenakshi Raman and Sangeeta Sharma, Oxford University Press, 2004. Chapters: 1, 2, 3, 4, 5, 7, 16.

2. Ethics in Information Technology, George Reynolds, Thomson Course Technology, 2003. Chapters: 1, 2, 4, 7, 8.

Reference Books:

1. Effective Technical Communication by M.Ashraf Rizivi, 1st.Edition, Tata McGraw Hill, 2005.
- 2.Ethics in Engineering by Mike W Martin and Ronald Schinzinger, 3rd Edition, Tata McGraw Hill, 2003.