

Rajiv Gandhi Proudhyogiki Vishwavidyalaya, Bhopal

Computer Application (MCA- Dual Degree) I Semester

Subject Code	Subject Name	Periods per week			Credits	Maximum Marks (Theory Slot)			Maximum Marks (Practical Slot)		Total Marks
		L	T	P		End Sem. Marks	Test (Two)	Assign. /Quiz	End Semester Practical/Viva	Practical Record /Assign./Quiz/ Presentation	
MCA DD -101	Fundamental of Computer Science & IT	5		-	5	70	20	10	-	-	100

UNIT I:- Information concepts and processing:- Evolution of information processing, data, information, language and communication. Elements of a computer processing system:-Hardware -- CPU, storage devices and media, VDU, input-Output devices, data communication equipment, software – system software, application software.

UNIT II:-MS-Windows: Operating system-Definition & functions, basics of Windows. Basic components of windows, icons, types of icons, taskbar, activating windows, using desktop, title bar, running applications, exploring computer, managing files and folders, copying and moving files and folders. Control panel – display properties, adding and removing software and hardware, setting date and time, screen saver and appearance. Using windows accessories.

UNIT III:- Documentation Using MS-Word - Introduction to Office Automation, reating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of MS-Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object, Template.

UNIT IV:-Electronic Spread Sheet using MS-Excel - Introduction to MS-Excel, Creating & Editing Worksheet, Formatting and Essential Operations, Formulas and Functions, Charts, Advance features of MS-Excel-Pivot table & Pivot Chart, Linking and Consolidation.

UNIT V:-Presentation using MS-PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

TEXT BOOK

1. Learn Microsoft Office – Russell A. Shultz – BPB Publication

REFERENCES BOOKS

1. Microsoft Office – Complete Reference – BPB Publication
2. Courter, G Marquis (1999). Microsoft Office 2000: Professional Edition. BPB.
3. PC Software – Shree Sai Prakashan, Meerut

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MCA DD -102	Discrete Mathematics	5		-	5	70	20	10	-	-	100

UNIT I:-Sets, Relations and Functions: Sets, Subsets, Power sets, Complement, Union and Intersection, De Morgan's Law, Cartesian products, Relations, Representing relation using relational matrices, Properties of relations, Equivalence relations, Functions, Injection, Surjection and Bijective mapping composition of functions, The characteristics functions and Mathematical Induction.

UNIT II:-Boolean Algebra: Mathematical Logic, Conjunction, Disjunction and Negations, Basic logical operations, Tautology, Contradiction, Logical Equivalence, Algebra of Proposition, Converse, Inverse and Contra positive proposition, Posets, Lattices, Definition of Boolean Algebra, Atoms of Boolean Algebra, Switching theory of Boolean Algebra.

UNIT III:- Graphs: Introduction, Finite and Infinite graphs Incidence and Degree, Isolated

vertex, Pendant Vertex & Null Graphs, Isomorphism between two graphs, Sub graphs, operations on graphs, Walk, Paths and Circuits, Connected graphs, Disconnected graphs and Components, Euler Graphs, Hamiltonian path and Circuits.

UNIT IV:- Trees: Definition and properties of tree, Pendant, Vertices in a tree, Distance and centers in a tree, Rooted and Binary trees, Spanning Trees, Weighted graph, Minimal Spanning Tree in a weighted connected graph, Kruskal's and Prim's Algorithm for finding minimal spanning tree.

UNIT V:- Matrix – definition, types of matrix, special matrix elementary transformation of matrix, inverse of matrix – adjoint methods and Gaussian elimination, normal form of matrix, rank of matrix, nullity of matrix (their applications) consistency and solution of linear simultaneous equations.

TEXT BOOK

1. J.P. Tremblay and R. Manohar; Discrete Mathematical Structures with Applications to Computer Science, Tata Mc-Graw-Hill Edition, 1997.
2. E.Balaguruswamy “Numerical Methods.” Tata Mc-Graw Hill Co. Ltd. 2000.

REFERENCES BOOKS

1. E.V.Krishnamurthy & S.K.Sen “Computer based numerical algorithms.
2. Alan Doerr and Kenneth Levasseur; Applied Discrete Structures for Computer Science, (Asian Student Edition), Galgotia Pub. Ltd., 1996
3. Narsingh Deo; Graph Theory with Applications in Engineering and Computer Science, PHI

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MCA DD -103	Communication Skills in English	5		-	5	70	20	10	-	-	100

UNIT I:-Communication : Meaning and process of communication, importance of effective communication, communication situation, barriers to communication. Objectives of communication, types of communication, principles .of communication, essentials of effective communication.

UNIT II:-Media of Communication: Written, oral, face-to-face, visual, audio Visual, merits and demerits of written and oral communication..

UNIT III:-Communication Skills : Developing communication skills, Listening, Speaking, Reading- Writing (Oral & Written). Body language; Utility of aids in Communication.

UNIT IV:-Spoken Skills: Preparing for oral presentation, conducting presentations, Debates, Seminar, Speeches, Lectures, Interviews, Telephonic Conversation, Negotiations; Group Discussions.

UNIT V:-Written Skills: Preparing of bio-data, seminar, paper, bibliography and official correspondence, Mechanics of writing, Formal & Informal writings, letters, paragraphing, precise, report writing, technical reports, length of written reports, organizing reports, writing technical reports; Creative writing; Common Errors in Language.

TEXT BOOK

1. Rajendra Pal and J.S. Korlahalli : "Essentials of Business Communication" , Sultan Chand & Sons Publishers, New Delhi.
2. U.S.Rai & S.M. Rai "Business Communications" , Himalaya Publishing House.
3. Menzal and D.H. Jones "Writing a technical Paper", Mc Graw Hill, 1961.
4. Strategy and Skill "Business .Communication", Prentice Hall New Jersey, 1987
5. Scot Ober "Contemporary Business Communication", Wiley India.

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MCA DD -104	Programming and problem solving in C	5		-	5	70	20	10	-	-	100

UNIT I:- Algorithm for problem solving: An Introduction, Properties of an algorithm, classification, algorithm logic, flowchart. Program design and implementation issues: programming system design technique, programming technique, basic constructs of structured programming, modular designing of programs. Programming Environment: High level programming language, Low level programming language, Middle level programming language, assembler, compiler, interpreter.

UNIT II:- Historical development of C, The C Character set, Types of C Constants, Types of C Variables, C keywords, identifiers literals. Type Declaration, arithmetic Integer Long Short, Signed unsigned, storage classes, Integer and Float Conversions, type conversion in assignment, hierarchy of operations.

UNIT III:- Decision control instructions in C, if, if-else, use of logical operator, hierarchy of logical operators, arithmetic operators, relational operators, assignment operators, increment and decrement operators, conditional operators, bit wise operators, special operators, "&,*,,>," "sizeof" Loops control structure : while loop, for loop, do – while loop, odd loop, nested loop, break , continue, case control structure, go to, exit statement

UNIT IV:- Array, array initialization, bound checking 1D array, 2D array initialization of 1D and 2D array, memory map of 1D and 2D array, Multidimensional array.Strings, standard library string function strlen(), strcpy(), strcat(), strcmp(), 2D array of characters

UNIT V:- Structure: use of structure, declaration of structure, accessing structure elements, how structure elements are stored, array of structure, uses of structure. Preprocessor: features of C Preprocessor, macro expansion, macro with arguments, file inclusion, conditional, #if, #elif, miscellaneous directives, #include, #define, directives, #undef, #pragma directives.

TEXT BOOK

1. Y. Kanetkar, "Let us C", BPB Publications

REFERENCE BOOKS

1. Programming with problem solving thought 'C'. (ELSEVIER)(for UNIT I)
2. "Programming in C", E. Balaguruswamy Tata McGraw Hill
3. "C The Complete Reference", H. Schildt, Tata McGraw Hill
4. The C Programming language by Brian W. Kernighan Dennis M. Ritchie Prentice Hall

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MCA DD -105	Digital Electronics	5		-	5	70	20	10	-	-	100

UNIT I:- The decimal number system, The binary number system, conversion from decimal to binary, decimal and binary fraction ,Octal number system ,conversion of decimal into octal, conversion of octal into binary, octal fraction, Hexadecimal number system, conversion of decimal into hexadecimal, ASXII, grey code excess-3 code, BCD numbers, Binary addition, subtraction by 1's and 2's complement

UNIT II:- Logic gates: NOT, OR, AND, NAND, NOR, XOR, XNOR gates. Boolean Algebra, De Morgan's Theorem. Application of gates.

Combinational logic circuits: Half adder and Full adder, Half and full subtractor, Multiplexer and Demultiplexer, Multiplexer as Boolean function generator, Encoder and Decoder, 2s complement, adder and subtractor, Binary adder.

UNIT III:- Boolean functions & truth table, SOP, POS, minterms, Simplification of logical circuits using Boolean algebra and karnaugh maps.

FLIP FLOPS, COUNTERS, REGISTERS

Flip flops, : Basic latches, RS flip flop, D flip flop, T flip flop, JK and JKMS flip flop,

Registers: Buffer register and shift register, control shift register.

Counters: Ripple counter, synchronous counters, ring counter, mod-10 counter, up and down counters.

UNIT IV:-TTL, circuits, digital Ics,74 series, TTL characteristics, Totem pole and open collector gates, comparison between different type of TTL, multiplexer, demultiplexer, encoder, decoder.

UNIT V:-

MEMORY, ADC AND DAC

Basic memory block: — Basic building block of ROMS, PROMS, EPROMS different types of RAM. Memory Expansion. ADC and DAC: ADC: dual slope, Successive approximation; DAC: binary weighted, ladder type, Specifications of ADC and DA.

TEXT BOOK

1. M. Morris Mano, Digital Design, 3.ed., Prentice Hall of India Pvt. Ltd.,

REFERENCE BOOKS

1. Digital Computer Electronics by Malovino and Brown McGraw Hill

2. Digital Fundamentals by Basavraj B. Vikas Publishing House (New Delhi)

3. Digital computer Fundamental by Thomas C Bartee. , 6th edition, Mc Graw Hill 1986.

4.Digital Systems- Principles and Design, Pearson Education, 2007.

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MCA DD -106	PC Software and Office Tools-Lab I			5	2				60	40	100

DOS

Practical based on DOS : introduction to PCs with related Hardware, software, DOS its variations, and Starting DOS.

DOS Commands : internal External Commands, common Commands notation, files & file command, Disk Command, Batch files introduction to batch processing, creation of batch file special batch file, autoexec.bat hard disk setup, configuring a system, creation of subdirectories, pipelines, filter and miscellaneous.

WINDOWS

1. Creating folder, cut, copy, paste, managing file and folder in windows.
2. Arrange icons, set display properties
3. Adding and removing software and hardware
4. Setting date and time, screen saver and appearance.
5. Using windows accessories.
6. Settings of all control panel items
7. Search file
8. Windows – 2000 Desktop setting – new folder, rename, recycle bin operation, briefcase, control panel utility, Display properties, screen saver, background setting.

MS-Word

1. Creating & Editing Document
2. Formatting Document
3. Use of Auto-text, Autocorrect, Spelling and Grammar Tool,
4. Page Formatting, Page Border, Background,
5. Creation of MS-Word-Mail Merge, Macros, Tables.
6. Practice of Printing, page setup etc.

MS-Powerpoint

1. Creating, Manipulating & Enhancing Slides,
2. Inserting Organizational Charts, Excel Charts
3. Using Word Art
4. Putting Animations and Sounds
5. Inserting Animated Pictures
6. Inserting Recorded Sound Effect

MS-Excel

1. Creating & Editing Worksheet, Fill Handle
2. Use Formulas and Functions
3. Preparing Charts