DEVI AHILYA VISHWAVIDYALAYA, INDORE

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES

COURSE OF CONTENTS
MCA 5 Years I Semester

2021

MCA 5 YEAR (BCA 3Yrs + MCA 2Yrs)

PROGRAMME

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES DEVI AHILYA VISHWAVIDYALAYA, INDORE

SCHEME OF MCA 5 Years I Semester

Code	Subject	L	T	P	C
IC-101	Mathematics I	3	1	0	4
IC-102	Problem solving using 'C'	3	1	0	4
IC-103	PC Software	3	1	0	4
IC-104	Digital Electronics	3	1	0	4
IC-105	English and Communication Skills	3	1	0	4
IC-106	Problem solving using 'C' Lab	0	0	4	2
IC-107	Digital Electronics Lab	0	0	4	2
IC-108	PC Software Lab	0	0	4	2
	Comprehensive Viva	0	0	0	4
				Total	30

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES
DEVI AHILYA UNIVERSITY, INDORE
MCA (5 Years) I SEMESTER
IC-101: Mathematics-I

Aim of Course: To provide a course on elementary mathematical techniques and familiarize students with basics of differentiation and integral calculus.
Objectives: • Understand basic concepts of Partial differentiation, Maxima & Minima of the function, convergence and divergence of the series. • Solve mathematical problems based on the course material. • To develop mathematical skills and methods appropriate for students in the computer science. • To prepare students for more advanced mathematical courses.
Course Contents:
UNIT I
Differential Calculus: Successive differentiation, Leibnitz's theorem, Expansion of functions, Maclaurin's theorem, Taylor's theorem, Indeterminate forms.
UNIT II
Tangents and Normal, curvature, Asymptotes.
UNIT III
Partial Differentiation: Euler's theorem on homogeneous functions, Mean value theorem and Taylor's theorems of two variables. Application: Maxima and minima of functions of two and more variables, Lagrange's method of undetermined multipliers.
UNIT IV
Integral Calculus: integration of irrational, and Transcendental functions, Reduction formulae, Integral as the limit of a sum, summation of series.
UNIT V
Convergence and Divergence: Convergence and Divergence of infinite series, Definition and various tests.
Text Books:

1. Gorakh Prasad, Integral Calculus. 2. Gorakh Prasad, Differential Calculus	
Reference Books:	
1.	Shanti Narayan, Differential Calculus.

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
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MCA (6 Years) I SEMESTER
IC-102: Problem Solving using C

Aim of Course: To develop logic of problem solving and learn basics of programming methodologies	
Objectives: • Develop the logic for the given problem • Recognize and understand the syntax and construction of C code • To gain experience of procedural language programming • Know the steps involved in compiling, linking and debugging C code • Apply all the concepts that have been covered in the theory course	
Course Contents:	
UNIT I	
Introduction to Programming Language & Problem solving Approach: Development of flow charts & Algorithms, Why Programming Language? Program development steps, Programming language classification, Translators, Program design techniques. History of C Language, Feature of C Language, Why is C Language Popular? Structure of C Program, A Sample C Language Program. Errors, Compilation and Execution of C Programs and Exercise.	
UNIT II	
Useful terms of Language: Data types, The C character set, Constants, Variables, Keywords, C Instructions, Type Modifier, Storage class specifies, Storage classes in C and Exercises. Operator Expressions and Assignment Statements: Arithmetic Operators, Relational and Logical Operators, Increment and decrement Operators, Assignment Operators and Expressions, Conditional Expression, Precedence and order of Evaluation and Exercises.	
UNIT III	
Control Structure in C: Decision Control Structures, Loop Control Structures, Conditional Statements and Exercises, break Statement, The continue Statement. Console Input and Output: Introduction to Input / Output, Unformatted and Formatted Input / Output Function.	
UNIT IV	
Array: Introduction to Array, One Dimensional Array, Multidimensional Array, Initialization, Declaration, Storage and Access Mechanisms on Array and Exercises. String Manipulation: Introduction to Strings, Two Dimensional Array of characters. Function: Introduction to Functions, Function Declaration and Prototypes, Function Definition, Call by Value and Call by Reference, return statement, exit() function, Function with arguments, Calling Function with Array, Command Line, Arguments, Recursion in Function.	
UNIT V	

Structure: Structure Definition, Giving Values to members, Structure initialization, Comparison of Structure variables, Array of Structure, Array within Structures, Structures within Structures, Passing Structures to Functions, Why use Structure, Features and Uses of Structures. Union: Union Definition and Declaration, Accessing a union Member, Union of Structures, Initialization of a Union Variable, Use of Union, Use of User Defined Type Declarations.	
Text Books:	
1.	Let us C, By Y.P. Kanitkar, B.P.B. Publications
Reference Books:	
1.	C -The Complete Reference, Tata Mcgraw Hill Publications
2.	C-How to Program, By Deitel & Deitel
3.	Programming in C & C++, By S.S. Khandare, S. Chand Publications

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
MCA (5 Years) I SEMESTER
IC-103: PC Software

Aim of Course: To make students understand basics of computer and its working.
Objectives: • To make students aware of basic units and model of computer. • To understand number system for data representation in computer. • Understand basics of Operating system and DBMS. • Learn working with MS Office and Internet.
Course Contents:
UNIT I
Introduction to Computer: Definition, Characteristics, functions and applications of a Computer, Components of a Computer: Hardware and Software, Block diagram of a computer: Input devices, Output devices, CPU, Memory. Classification of computer, generation of computer. Data representation and computer software: Number system-Binary, Decimal, Octal, Hexadecimal and its conversion. Computer software: system software and application software. Computer languages: Machine, Assembly, High level and Fourth generation languages
UNIT II
Introduction to Operating System: Definition and functions of an Operating System, Type and classification of Operating Systems.. Introduction to Data Base Management System: Introduction, Quality of information, What is Database, DBMS? Why a database, DBMS? Types of DBMS
UNIT III
Microsoft office environment: Microsoft Word: Working with Word, Typing and Editing, Formatting Text, Page design and layout, adding tables, using graphs, mail merge Microsoft Excel: Working with excel, entering data, formatting, customizing workplace, calculation in worksheet, adding charts, advanced features of excel. Microsoft–PowerPoint: Working with PowerPoint, Adding Text, Including Multimedia, Customize PowerPoint, Microsoft Access: Creating database, addition and deletion of records, searching, sorting and indexing the records, creating tables and records, advance features of Access.

UNIT IV
Internet and World Wide Web: Introduction, Internet access, Internet basics, Internet protocols, Internet addressing, Web pages and HTML, Web browser and search engines, Electronic mail. Computer Security: Physical access restriction, Passwords, Firewalls, Cryptography, Computer virus, Bombs and worms. Antivirus software. MSDOS: DOS features, External and Internal Commands, Managing disks, advanced command techniques, working with batch programs. Microsoft Windows and its environment
UNIT V
Introduction to Multimedia: Introduction, Multimedia in entertainment, Multimedia in software training, Multimedia in education training, Multimedia server and databases, Multimedia tools. **Text Books:** 1. Alexis Leon, Introduction to Computer 2. Alexis Leon, Introduction to Information Technology
Reference Books:

1.	P.K.Sinha ,Fundamentals of computers .

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES, DAVV, INDORE
MCA (5 Years) I SEMESTER
IC-104: Digital Electronics

Aim of Course: To understand basic concepts of digital logic, its operations, principles and applications.
Objectives: The course is designed to make students: • Understand number systems and codes, and Boolean Algebra • Understand TTL and CMOS circuit characteristics, followed by logic devices such as flip-flops, code converters, counters, multiplexers, and registers.
Course Contents:
UNIT I
Binary Systems and logic circuits. Decimal, Binary, Octal, Hexadecimal numbers and their inter conversions. ASCII, Gray, Excess-3, 8-4-2-1,Error detecting and BCD codes. Logic Gates. Boolean algebra. Demorgon's theorem. Binary addition and subtraction. Unsigned Binary numbers, Signed binary numbers. 2's complement representation and its arithmetic.
UNIT II
Circuit analysis and design. Boolean laws and theorems. Sum of Product and Product of Sum simplification. Two, three and four variable karnaugh map. NAND and NOR implementation. Other two level implementation. Don't care conditions.
UNIT III
Combinational circuits. Design procedure. Half adder, full adder, adder-subtractor circuit. Code

converters. Various logic circuits. Multilevel NAND circuit. Multilevel NOR circuit. Data Processing circuits. Multiplexers, demultiplexers, decoders and encoders. Binary parallel adder, look ahead carry generator, magnitude comparator, ROM, PROM, PLA.
UNIT IV
Sequential circuit. Flip-flops, triggering of flip-flops. Analysis of clocked sequential circuits, state reduction and assignment, flip-flop excitation tables.
UNIT V
Registers, counters and integrated circuits. Design of counters, registers, shift registers. Ripple counters, synchronous counters. TTL logic families.
Reference Books:

1.	M.Morris Mano , Digital Logic and Computer Design.
2.	Malvino A.P. and Leach D.P, Digital Principals and Application.
3.	Taub H. and Schilling D, Digital Integrated Electronics

INTERNATIONAL INSTITUTE OF PROFESSIONAL STUDIES,
DEVI AHILYA UNIVERSITY, INDORE
MCA (5 Years) I SEMESTER
IC-105: English & Communication Skills

Aim of Course: The aim of this course is to enable students to improve both their ability to communicate and linguistic competence in English language.
Objectives: • To give students knowledge of correct usage of English with an emphasis on reading and writing skills. • To practice writing skills at sentence and paragraph levels with correct grammatical structures. • To practice and learn English speaking skills to communicate in daily situations effectively.
Course Contents:
UNIT I
Meaning and Definition of communication, Process of Communication. Objectives and functions of communication.
UNIT II
Components of effective communication, 4C's of effective communication. Group discussion. Listing skills, types of skills.
UNIT III

Types of communication – verbal, non-verbal, written and oral communication. Report writing. letter writing	
UNIT IV	
Communication barriers, formal and informal channels of communication. Public speaking.	
UNIT V	
Practical Training : Making effective presentation	
Reference Books:	
1.	C. S. Raydu, Communication Skills.
2.	Andal N., Communication Models.
3.	Keval J. Kumar, Communication Barriers.
4.	Dennis Maquail, Effective Communication.