Chhattisgarh Swami Vivekanand Technical University, Bhilai

SCHEME OF TEACHING & EXAMINATION

Master of Computer Applications (MCA) Ist Semester

S.NO	Board of Study	Subject Code	Subject	Periods Per Week			Scheme of Exam Theory / Practical			Total Marks	Credits L+(T+P)/2
				L	T	P	ESE	CT	TA		
1	Applied Maths	521151(14)	Mathematical Foundations of Computer Science	4	1	0	100	20	20	140	5
2	Computer Applications	521152(21)	Information and Web Technology	4	1	0	100	20	20	140	5
3	Computer Applications	521153(21)	Problem Solving And Program Design With C	4	1	0	100	20	20	140	5
4	Computer Applications	521154(21)	Computer Organization & Architecture	4	1	0	100	20	20	140	5
5	Humanities	521155(46)	Professional communication in English	4	1	0	100	20	20	140	5
6	Computer Applications	521161(21)	Programming Lab in C	0	0	4	75	_	25	100	2
7	Computer Applications	521162(21)	Software Technology Lab I	0	0	4	75	_	25	100	2
8	Humanities	521163(46)	Professional Communication in English	0	0	4	50	_	25	75	2
9	Humanities	521164(46)	Personality Development	0	0	2	_	_	25	25	1
10			Library	-	--	1	--	--	--	--	--
			TOTAL	**20**	**5**	**15**	**700**	**100**	**200**	**1000**	**32**

ESE: End Semester Examination CT: Class Test TA: Teacher's Assessment L: Lecture T: Tutorial P: Practical
Note: Duration of End Semester Examination of all theory papers will be of Three Hours

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Information & Web Technology**	Semester:	**I**
ESE Duration:	**Three Hours**	Code:	**521152(21)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
Maximum Marks:	**100**	**Minimum Marks:**	**40**

Course Objectives:

1. To understand the basic concepts of computer and organization of a computer.
2. To provide the fundamental concepts of Internet and to make students recognize the difference between various Internet protocols.
3. To introduce the concept of e-mail, list server & file transfer protocols.
4. To introduce the concept of HTML, Javascript & XML.
5. To introduce the concept of Internet security, Firewalls, E-commerce & EDI.

UNIT – I **Introduction to Computer and Hardware:** Introduction of Information Technology, Concept of Data and Information, Data processing, History of Computers, Organization of computers, Input and output devices, Storage devices and file organization system, Applications of Information Technology in business, industry, entertainment, science , engineering and medicine.

UNIT – II **Internet and its Application:** Evolution of internet, Internet applications, TCP/IP, Addressing in Internet (IP), Domains, Internet service providers, Connectivity such as dial up, leased line, VSAT. E-mail protocols (X-400, SMTP, UUCP), Description of E-Mail headers, Email routing, list server, e-mail client, POP-3, IMAP- 4.

UNIT – III **FTP and Telnet:** Introduction to File Transfer Protocol(FTP), Public domain software, Types of FTP servers (including anonymous), Telnet protocol, Server domain, Telnet client, Terminal emulation. Usenet and Internet relay chat, Web publishing tool, Website planning, Where to host your website , Multiple sites on one server, Maintaining a web site, WWW servers, HTTP & URLs,Registration of website on search engines , maintenance of website.

UNIT – IV **Dynamic HTML and Web Designing:** HTML Basic concepts,Web designing issue, Structure of HTML documents, HTML Elements: Core attributes, Language attributes, Core Events, Block Level Events, Text Level Events, Linking Basics, Linking in HTML, Images and Anchors, Anchor Attributes, Image Maps, Semantic Linking Meta Information, Image Preliminaries, Image Download issues, Images as Buttons, Introduction to Layout: Backgrounds, Colors and Text, Fonts, Layout with Tables, Advanced Layout: Frames and layers.

UNIT – V **Internet Security:** Internet security threats, Firewalls, Introduction to AAA, E-Commerce: Introduction, Concepts & technology, Advantages, Limitations, Various electronics payment system, Introduction to EDI, Virtual Reality. Internet Viruses.

Text Books:

1. Computers Today, S.K.Basadra ,Galgotia Publication.2nd edition.
2. Internet for Every One , Alexis Leon and Mathews Leon, Tech World.2008 print.

Reference Books:

1. Introduction to Computers, P.K.Sinha ,BPB Publication, 6th edition.
2. Fundamentals of Computers, V.Rajaraman ,Prentice Hall of India,4th edition.
3. Using HTML 4, XML and JAVA, Eric Ladd, Jim O'Donnel ,PHI - 1999.
4. Frontiers of Electronics of Commerce , Ravi kalakota & Andrew B. Whinston Addison Wesley ,1196

Course Outcome:

1. Student will be familiar with fundamentals of computers and organization of computer.
2. Students will be familiar with various Internet protocols and the concepts of Internet.
3. Students will able to differentiate between various e-mail protocols and their working.
4. Students will be familiar with the concept of remote login with the understandability of hosting and maintaining of website.
5. Students will also get knowledge about Internet security and Firewalls.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Mathematical Foundations of Computer Science**	Semester:	**I**
ESE Duration:	**Three Hours**	Code:	**521151(14)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
Maximum Marks:	**100**	**Minimum Marks:**	**40**

Course Objectives:

- To make student learn the logical structure of statement, Boolean algebra and its valid applications.
- To make students learn concepts of relations and functions.
- To make students learn Cartesian product of sets and grammars
- To make students understand the concepts of graphs and their matrix representation.
- To make students learn the basic concepts of Graph theory and its application in coding.

UNIT – I **Mathematical Logic & Boolean Algebra:** Statements & Notations, Connectives, Normal Forms,Basic concepts of Boolean Algebra, Boolean functions, Applications of Boolean Algebra in Switching Circuits, Logic circuits, Karnaugh maps, methods for simplification of Boolean expressions.

UNIT – II **Ordered Structures, Relations & Functions:** Tuples, Lists, Strings & Languages, Numerals, Relations, Properties of Relations, Partial order Relation, Lattices. Functions, Properties of Functions, Composition of Functions, The map function & some useful functions.

UNIT – III **Construction Techniques & Grammars :** Inductively defined sets, Numbers, Strings, Lists, Binary Trees, Cartesian product of sets, Recursive functions and Procedures, Grammars.

UNIT – IV **Graph Theory :** Basic concepts of Graph Theory, Paths and Circuits, Trees and Fundamentals Circuits, Matrix Representation of Graphs, Directed Graphs.

UNIT – V **Group Theory & Coding:** Basic concepts of Group Theory, Homomorphism & Isomorphism of Groups, Cosets and Langrage's Theorem , Elements of Coding Theory, Group codes, Decoding, Hamming Matrices, Parity check & Generator Matrices.

Text Books:

1. Discrete Structure, and Logic and Computability, James L. Hein, Narosa Pub. House. 3rd Edition.
2. Discrete Mathematical Structures with Applications to Computer Science, Trem blay, J.P. & M anohar .R., Tata M cG raw Hill. 2000

Reference Books:

1. Discrete and Combinatorial Mathematics, Ralph, Grimaldi, Pearson Education.5th edition
2. Graph Theory with Applications to Engineering & Computer Science, N .Deo , Prentice Hall. 2004
3. Discrete Mathematical Structures, Kolman, B, Busby, R.C.Ross, S.C. Pearson Education. 2006
4. Elements of Discrete Mathematics, Liu, C.L. 2006Tata McG raw Hill, 2nd edition

Course Outcome:

1. Students will be able to analyze the logical structure of statements symbolically including the proper use of logical connectives, applications of Boolean algebra in circuits and karnaugh map.
2. Students will be able to determine whether a relation is reflective, symmetric and transitive. They will be able to apply the different types of functions and Hash diagram.
3. Students will be able to construct inductively defined sets and recursive function. Also they will construct the grammars.
4. Student will be able to understand the basics of Graph Theory and trees.
5. Student will be able to understand the basics of Group Theory and coding.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Problem Solving & Program Design with C**	Semester:	**I**
ESE Duration:	**Three Hours**	Code:	**521153(21)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
Maximum Marks:	**100**	**Minimum Marks:**	**40**

Course Objectives:

- To understand basic constructs of C language.
- To develop problem-solving skills.
- To understand the purpose of pointers for parameter passing, referencing and dereferencing, and linking data structures.
- To provide programming basics for all related subjects

UNIT – I **Introduction to C Language:** Problem solving methods, Introduction to algorithms and flowcharts, Top down design, Bottom up design, Structure of a C program, Constants and variables, Identifiers and Keywords, Data types, Declarations, Operators and Expressions, Priority and Associativity of operators, Comma operator, Type conversion and Type casting, Symbolic constants. Formatted Input-Output functions : getchar, putchar, scanf, printf, gets, puts. Control Statements : while, do-while, for-statements, nested loops , if-else, switch, break, continue and goto statements.

UNIT – II **Functions and Arrays:** Introduction to functions, Arguments, Return value, Parameter passing - Call by value, Call by reference, Return statement, Calling a function, Recursion basics. Storage classes. Library functions, Arrays- Defining an array, Passing an array to a function, Multi-dimensional arrays. Strings in C: Operations and Functions.

UNIT – III **Pointers and Preprocessor directives:** Pointers- Declarations, Passing to a function, Operations on pointers. Pointers and arrays, Array of pointers. C-preprocessor directives – basics, #include, #define, #undef, Conditional compilation directives like #if, #else, #elif, #ifdef and #ifndef. Command line arguments.

UNIT – IV **Structures and Memory management:** Defining and processing, Passing to a function, Pointer to structures, Structure within structure, Array in structure, Array of structures, Unions. Dynamic memory management functions like malloc() , calloc(), free(), realloc().

UNIT – V **File Handling :** Files in C, Types of files, Different modes of accessing a file, opening and closing of files: fopen(), fclose(), File operations: character I/O, String I/O, Word I/O.
Formatted I/O : fprintf(), fscanf(), Block read and write : fread(), fwrite(), Low level file operations: read(),write() and close(). Random access file processing : fseek(), ftell() and rewind(). File functions :feof(),ferror(),fflush().

Text Books:

1. Let us C, Kanetkar Y.P., BPB Publications.,2002
2. Programming and problem solving in 'C', Gottfried, TMH (Schaum series),3rd edition.

Reference Books:

1. The C programming language, Kernighan and Ritchie, PHI,2nd editon
2. The Spirit of C, Cooper Mullish, Jaico Publishing House, Delhi,2005
3. Pointers in C, Kanetkar Y.P. , BPB Publications.2002.
4. Programming in C, Balagurusamy E.5th edition.
5. Introduction to C programming, Reema Thareja, Oxford publication.

Course Outcome:

1. Student will understand the basic terminology used in computer programming
2. Student will be able to design programs involving decision structures, loops and functions.
3. Student will understand the dynamics of memory by the use of pointers.
4. Student will understand different data structures and create/update basic data files.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Computer Organization & Architecture**	Semester:	**I**
ESE Duration:	**Three Hours**	Code:	**521154(21)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
Maximum Marks:	**100**	**Minimum Marks:**	**40**

Course Objectives:

1. To make the students aware about the data representation, digital components of the computer hardware.
2. To study the design principles in computer architecture and organization.
3. To study the functional units of the PC, basic working of CPU
4. To learn algorithms of computer arithmetic and basics of I/O operations.
5. To understand the memory organization.

UNIT – I **Data Representation and Digital Components:** Number system (decimal, BCD, octal, hexadecimal) and conversions, r and r-1's complement, Fixed and Floating point representation, Binary codes: Excess-3, ASCII, EBCDIC, Error detection codes. Boolean Algebra, Map simplification K-Map, Logic Gates, Combinational Circuit: Half and Full Adder, Decoder and Multiplexer; Sequential Circuit: Flip-Flop (SR, D, JK, Master-Slave), Registers, Counters.

UNIT – II **Principles of Computer Design:** Register Transfer Language (RTL) and Micro-operation : Arithmetic, Logic and Shift micro operation, Instruction code, Computer registers, Computer instructions, Timing and control, Instruction Cycle and Interrupt Cycle, Memory reference instructions, Input-output and interrupt, Design of basic computer

UNIT – III **CPU and Control Unit:** General register organization, Stack organization, Instruction format, Addressing modes, Data transfer and manipulation language, Micro-programmed and Hardwired control, RISC vs CISC, Pipelining in CPU design: Arithmetic and RISC pipelining.

UNIT – IV **Computer Arithmetic and I/O Techniques:** Addition, Subtraction, Division and Multiplication Algorithm, Input-Output Interface, asynchronous data transfer; Modes of transfer: Programmed I/O, Interrupt Mechanism, Direct Memory Access (DMA), I/O Processor.

UNIT – V **Memory Organization:** Memory hierarchy: Static and Dynamic RAM, ROM; Building large memory using chips, Associative Memory: associative mapping, Direct mapping, set associative mapping; Cache Memory Organization, Virtual Memory, Cache Coherence.

Text Books:

1. Computer System Architecture , Morris Mano ,PHI, 3rd Edition)
2. Computer Organization and Architecture ,William Stalling (PHI), 2000.

Reference Books:

1. Computer organization and Architecture , J.P.Hayes (TMH), 3rd Edition.
2. Digital Computer Logic Design , Morris Mano ,PHI,3rd Edition
3. Computer System Architecture and organization,Dr.M. Usha,T. S. Shrikant,Wiley publication.

Course Outcome:

1. Student will be familiar with different digital components used in Computers and the organization and design of digital computer.
2. Students will learn about the basic computer instructions.
3. Students will have an idea about the basic design of a CPU .
4. Students will learn about the arithmetic operations performed by a processor.
5. Students will have knowledge of memory organization within a computer.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Professional Communication in English**	Semester:	**I**
ESE Duration:	**Three Hours**	Code:	**521155(46)**
Total Theory Periods:	**40**	Total Tutorial Periods:	**10**
Class Tests:	**Two (Minimum)**	Assignments:	**Two (Minimum)**
Maximum Marks:	**100**	**Minimum Marks:**	**40**

Course Objectives:

1. To introduce the students to the basics of communication and its importance.
2. To enable the students to correspond effectively through letters and handle correspondence.
3. To help students prepare technical and non-technical reports.
4. To help students write resume and respond to job advertisements.
5. To help students learn about interpersonal communication
6. To help students write grammatically correct English
7. To help students prepare and perform n interviews.

UNIT – I **Communication:** Definition, Process, Elements, Objectives of Communication, Different Medias of Communication, Verbal and Non-verbal Communication, Principles of communication, Barriers to Communication and How to overcome them, Communication in an Organization : Listening-Introduction, Advantages and Importance, Barriers in effective listening, How to become a good listener.

UNIT – II **Letter Writing**: Types of letters, Elements of letters, Styles of letter writing, Basics of official correspondence, Preparation of Resume and job application, Quotation, Orders, Sales letter, Tender, Handling correspondence, Advertising and job description.

UNIT – III **Types of Report:** Characteristics of report**,** Elements of report, Preparation and writing of report, Use of illustrations in reports, Technical report writing, Preparation of Bibliography and References, Note taking and Note making.

UNIT – IV **Precise writing:** Meetings (Notice, Agenda and Minutes writing techniques) Preparation for Presentation, Conferences and Seminars, Interviews, Techniques of effective speech and interpersonal communication, Business and Technical proposals.

UNIT – V **Grammar**: Comprehension of unseen passage, Determiners, Subject, Verb, Concord, Tenses, Question Tags, Voice, Narration, Preposition, Correction of sentences, Paragraph writing.

Text Books:

1. Business Correspondence and Report Writing-RC Sharma and Krishna Mohan, Tata McGraw-Hill 2005
2. Developing Communication Skills- Krishna Mohan and Meera Banerjee, McMillan India Ltd.New Delhi, 2000.

Reference Books:

1 .Essentials of Business Communication-Rajjendra Pal and J S Korlahalli, Sultan Chand and Sons,2005.
2. Effective Technical Communication-M Ashraf Rizvi , Tata McGraw-Hill Company Limited New Delhi,2005
3. Introduction to Communication Studies-John Fisk, ,Rotledge London, !990
4. Living English Structure-W.Stannard Allen, Orient Longman London Fourth edition, 1959
5. A Remedial English Grammar for Foreign Students-F T Wood Mac-Millan India Ltd
6. Writing Technical Papers- D H Menzel, H M Jonest, McGraw Hill, 1961.
7. Business Communication-Asha Kaul, Prentice Hall, New Jersey, !987

Course Outcome:

1) Students will be able to understand the basics of communication, barriers to communication and how to overcome them.
2) Students will be able to correspond clearly and learn to handle correspondence.
3) Students will be able to understand the different elements of a report along with their importance.
4) Students will be able to write reports in the correct format.
5) Students will be able to respond to job advertisements and write resume.
6) Students will learn how to prepare and present technical and non-technical proposals.
7) Students will be able to write notice, agenda and minutes related to meetings.
8) Students will be able to learn how to prepare and face interviews.
9) Students will be able to write grammatically correct English.
10) Students will be able to comprehend given written material and elaborate the ideas.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Programming Laboratory in C**		
Semester:	**I**	Code:	**521161(21)**
Total Lab Periods:	**48**		
Maximum Marks:	**75**	**Minimum Marks:**	**38**

List of Experiments/Programmes (At least Ten are to be performed/executed by each student)

1. Write a program to calculate the principal interest on a given amount for a given rate and time period.
2. Program to print the largest of 3 numbers. (Use of *if* statement)
3. Write a program to print whether an entered character is an upper case, lower case, a digit or other character. (use of *if* and char data type)
4. Program to take an integer array of 10 elements as input and print the largest, smallest, sum of all the elements. (use of *for* loop)
5. Write a C program to print the sum of digits and reverse of the number using a user-defined function. (use of *while* loop)
6. Write a program to find whether a number is a prime or not. (use of break)
7. Write a program to print numbers from 1 to *n* except the multiples of 5. (use of continue)
8. Write a C program to take a char array as input and print the number of characters, vowels in that array using pointers. (use of s*tring*)
9. Write a program to take a sentence as input and convert the string so that the first letter of each word is in upper case using pointers.
10. Write a program to take 5 names as input and sort the names and print it.
11. Write a C program to check whether a string is a palindrome or not.
12. Write a C program to calculate the factorial of an integer using a user-defined function. (use of function)
13. Write a C program to print the factorial of an integer using a recursive user defined function. (use of recursion)
14. Write a C program to print the sum of first N natural numbers using a recursive function.
15. Write a C program to print the Fibonacci series using recursive function.
16. Write a program to sort N numbers. (1D array)
17. Write a C program to take a 3x4 matrix of integers and print the sum of all the elements of each row. (2D Array)
18. Write a C program that takes two matrices of dimension *m* x *n* and *n* x *k* respectively and prints the product matrix.
19. Write a C program to define a structure Employee containing Employee number, Employee name, salary as members. Initialize an array of 5 Employees and print the details of all Employees and print the details of the Employee with highest salary.
20. Write a C program to define a structure Complex that will contain real and imaginary as members. Define a function swap that will swap the values of two variables of type Complex. (use of call by reference)
21. Write a C program to read the contents of a text file and count the number of vowels, number of lines in it.
22. Write a program that will ask the user to enter the details of 5 students and transfer those details into a binary file Stud.dat. Write another file that will read the details of the students and print the names of all those students who have total marks greater that a particular given value.
23. Write a program that will take a two file names from the command line and transfer the contents of first file into the second. (Command line arguments)
24. Write a macro for calculating discriminant. Write a C program that uses it for finding the roots of the quadratic equation.
25. Write the programs to display different patterns.

Recommended Books:

1. Let us C, Kanetkar Y.P., BPB Publications.,2002
2. Programming and problem solving in 'C', Gottfried, TMH (Schaum series),3rd edition.

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Software Technology Laboratory – I**		
Semester:	**I**	Code:	**521162(21)**
Total Lab Periods:	**48**		
Maximum Marks:	**75**	**Minimum Marks:**	**38**

List of Experiments/Programmes (At least Ten are to be performed/executed by each student)

1. Internal and external command of DOS.
2. Create your resume using MS word.
3. Create mark sheet using Ms Excel.
4. Create Power point presentation.
5. Visual Basic- an Integrated Development Environment (IDE): An introduction, Explain New project window, Property window, Project Explorer window, Watch window, etc. Design and identity card containing information regarding students such a s Name, Roll No., Address, Class studying, Date of Birth, Blood Group, Phone No., etc. Add a Exit Button.
6. Develop an application to calculate Interest. It should accept rate of interest, period for calculation of interest (years), amount on which interest is to be calculated (Rs.). After clicking Compute Investment amount (Principal + Interest) should be displayed in separate text box.. Add Exit button, Proper text box controls and labels to be used. Provide 2 options- Simple, Compound interest. Provide Picture and Radio Button control.
7. Make a sample program to display and change the color according to the scrollbar value.
8. Make a sample program to demonstrate the use of list box and combo box controls.
9. Design a HTML page describing your profile in one paragraph. Design in such a way that it has a heading, a horizontal rule, three links and your photo also write three HTML documents for the links.
10. Design HTML page describing your academic career. The page will tell about the degrees, Institutions and your hobbies. Add some lists too.
11. Design HTML page demonstrating Concept Of Internal Hyper-link.
12. Design HTML page which gives the list of grocery Items by using Unordered List bullets are of form disc, square and circle.

Recommended Books:

1 .Visual Basic Project ,Soma Dasgupta , BPB publication,2002
2. Visual Basic ,Black book,Holzner,2009

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Name of program:	**Master of Computer Applications**		
Subject:	**Professional Communication in English Laboratory**		
Semester:	**I**	Code:	**521163(46)**
Total Lab Periods:	**48**		
Maximum Marks:	**50**	**Minimum Marks:**	**25**

List of Experiments/Programmes

1. Elementary Phonetics (Speech Mechanism. The Description of Speech Sounds, The Phoneme the syllable; Intonation and Word Accent)
2. Exercise on Listening Comprehension
3. Exercise on Reading Comprehension
4. Just a Minute (JAM Sessions)
5. Situational Dialogues (Role Play)
6. Conducting Mock Interviews
7. Writing Articles on current topics
8. Extempore and Debate
9. Preparation of transparencies, slides, power point presentation
10. Paper presentation