Teaching Learning process

i. Curricula and syllabi for each of the programmes as approved by the University.

M.C.A. FIRST YEAR I SEMESTER CURRICULUM

CS 603

COMPUTER PROGRAMMING USING C++

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination:	80 Marks
Sessional.	20 Marks

UNIT -I

Introduction to C++ Programming: Programming and Problem Solving- Introduction of

C++ , Kinds of program errors.

C ++ Basics: Variables and assignments, input and output, Data types and expressions, Functions: Void functions, Call by value parameters, Call by reference parameters, Procedural abstraction, Testing and debugging-functions.

UNIT-II

Objects and Classes: Introduction to classes and objects, Streams and Basic *File* I/0, Tools for stream I/0
and Character I/0.
Defining classes: Structures, Classes, Abstract data types.
Flow of control: Branching and loops.

UNIT -III

Overloading functions, overloading operators, Friend functions.
Destructors and Copy Constructors.
Separate Compilation and namespaces.
Arrays; Introduction to arrays -Arrays_in functions, Programming with arrays, arrays and classes.
Strings and Multi-dimensional arrays : String basics, Multi-dimensional arrays.

UNIT-IV

Pointers and Dynamic Arrays: Pointes, Dynamic arrays, Classes and Dynamic arrays.
Recursion: Recursive functions for Tasks, Recursive functions for Values, Recursive design techniques.

Templates: Function Templates, Class Templates.

UNIT -V

Inheritance: The concept of inheritance, derived classes, Redefinition of member functions vs. overloading, Assignment operators and Copy constructors for derived classes, Polymorphism: Overriding and Virtual functions.
Exception Handling: Basics, Programming techniques for exception handling.

Suggested Reading:

1) Walter Savitch, "Problem Solving with C++", Second Edition, Pearson Education Publishing, 2003.
2) AI Stevens, "C++ Programming", Seventh Edition, Wiley DreamTech,2003
3) Bjarne Stroustrup, "The C++ Programming language", 3rd Edition, Addison-Wesley, 1998.

CS 601

DISCRETE MATHEMATICS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	80 Marks
Sessional	20 Marks

UNIT-I

Mathematical Logic: Statements and notation, connectives, Normal Forms, Disjunctive Normal Forms (DNF), Conjunctive Normal Forms (CNF), Principal DNF, Principal CNF.

Set Theory: Basic Concepts of Set Theory, Relations and Ordering, Functions and Recursion.

UNIT -II

Lattices, Boolean Algebra, Representation and Minimization of Boolean functions.
Semi-groups, Product and Quotients of Semi-group, Groups, Product and Quotients of Groups, Coding of Binary Information and Error Detection, Decoding and Error Correction.

UNIT -III

Combinatorics: Basics, Permutations and Combinations with repetitions and Constrained Repetitions, Binomial and Multinomial Theorems, Principle of Inclusion and Exclusion.

UNIT -IV

Graph Theory-l: Basic Concepts, Isomorphism, Sub-graphs, trees and their Properties. Spanning Tree, Directed Trees, Binary Trees

UNIT -V

Graph Theory-lI: Planar Graphs, Euler Formula, Multi-graphs and Euler Circuit, Hamiltonian Circuit, Chromatic Numbers, Four Color Problem.

Suggested Reading:

1) Jr. P. Trembley and R. Manohar, "Discrete Mathematic cal structures with Applications to computer science", Mc Graw Hill, 1987.
2) Bernard Kolman, Nadeem Ur Rehaman "Discrete Mathematical Structures" Pearson Education, 2005.
3) J .L.Moth, Abraham Kandel, and T .P .Parker, "Discrete Mathematics for Computer Scientists and Mathematicians", PHI,1976.

CS 604

ELEMENTS OF INFORMATION TECHNOLOGY

Instruction: 4 Periods per week
Duration of University Examination 3 Hours
University Examination 80 Marks
Sessional: 20 Marks

UNIT -I

Digital Age: Digital basis of computers, Data /information, Hardware input, output, memory, communication hardware, software, application software, system software, communications, Five kinds of computers, development in communication technology, connectivity and interactivity.
Five Generations of Programming Languages, Programming languages used today object oriented & visual programming.
Operating Systems: Booting managing storage, resources, files tasks, common operating systems, Windows 95/98, DOS, and Windows -NT .

UNIT -II
Processors: The CPU and main memory, Data representation, micro computer system unit, input & output devices, keyboard, pointing devices, source data entry devices, soft copy output, hardcopy output, more output devices, Diskettes, hard disks, optical disks, flash memory, magnetic tape, compression and decompression.

UNIT -III

Telecommunications: Voice, Video Voice communication, the internet, the World Wide Web, new internet technologies. Communication channels, networks, conduits of communication, communication networks, local networks, factors affecting communication among devices.

UNIT- IV

Files & Databases: Data storage hierarchy, file management, flies management systems, "Database management systems, type of database organization, and features of a DBMS. Application Software: Common features of software, word processing, spread sheet, : software for cyber space, Internet programming, HTML, XML, & Active X.

UNIT -V

Information Systems: Organizations, departments, tasks, management Management information systems. Six phases of system analysis and design. Software Development: Programming as a five step procedures.

Security Issues: Threats to computers & Communication systems. Safeguarding computers and communications.

Suggested Reading:

I) Williams B.K. Sawyer et.al., "Using information Technology', Sixth Edition, Tata McGraw Hill, 2006.

2) Dennis P. Curtin, Kim Folley, et.al., "Information Technology, The breaking Wave", Tata McGraw Hill, 1998.

3) ITL Edn Solutions Ltd. "Introduction to Information Technology", Education,2005.

MA T 606 **ELEMENTARY MATHEMATICS**

Instruction	4 Periods per week
Duration of University Examination:	3 Hours
University Examination:	80 Marks
Sessional	20 Marks

UNIT -I

Algebra: Mathematical induction, Logarithms and surds, quadratic expressions, equations and inequalities, summation of series matrices and groups.

UNIT -II

Differential calculus: Integration and simple applications.

UNIT -III

Integral Calculus: Integration and simple applications. .

UNIT -IV

Vector Algebra: Vectors and scalars, vector addition, vector equations of line and plane, scalar and vector products of vectors, triple products.

UNIT-V.
Trigonometry: Angles and measurement of angels, trigonometric ratios and value of a function at a certain value, compound angles, trigonometric ratios of compound angles, complex numbers and De. Moivre's theorem, Hyperbolic functions.

Suggested Reading:

1) BSS Murthy, Venkateswara Rao & V. Krishna Murthy, "intermediate Mathematics-Part I and II", Chand and Co.

CM 60I

MODERN ECONOMIC ANALYSIS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	80 Marks
Sessional	20 Marks

UNIT -I
The nature and scope of managerial economics, Fundamental concepts of managerial economics.

UNIT -II
Demand analysis, concepts of demand, demand elasticities.

UNIT -III
Production and cost analysis and principles: Production function, sIngle output isoquantum, average cost curve -Laws of returns -Laws of supply, Price determination under perfect competition.

UNIT -IV
National income: Concepts, measurement and determinants.
Planning: The machinery for planning in India, Salient features of India's Five,Year plans.

UNIT-V
Indian Financial Systems, Functions and role of Reserve Bank of India. Conventional Banks and Industrial Finance. Term"lending Financial Institutions -role and functions.

Suggested reading:

I) Dhiraj Bhatacharya & Pranab Chakraborti, "Fundamentals of Business Economics", A. H. Wheeler & Co. (P) Ltd., 1986.

2) Barry Keating, J. Holton Wilson, "Mangeral Economics", Biztantra, Second Edition,2003.

3) Dominick Salvatore, "Manageral Economics", Thomson, Fourth Edition, 200 I.

MAT 602

PROBABILITY AND STATISTICS

Instruction	4 Periods per week
Duration of University Examination	3 Hours
University Examination	80 Marks' ..
Sessional.	20 Marks

UNIT -I

Data Validation and information abstraction: Methods of collecting data efficiently, gathering information from data charting.

UNIT -II

Probability: Laws of probability, Probability distributions, Discrete, equiprobable, binomial, Poisson.

UNIT -III

Continuous distributions: Rectangular, normal, gamma and beta.

UNIT –IV

I Statistical methods: Frequency distributions, mathematical expectation ,moments, skewness and

kurtosis.

UNIT -V

Correlation and regression, Introduction to tests of significance, u, t, x tests.

Suggested reading:

1) S.C. Gupta and V.K. Kapoor, "Fundamentals of mathematical Statistics", 1989.

2) William Mendenhall, Robert J. Beaver, Barbara M.. Beaver, "Introduction to Probability and Statistics", Thomson Brooks/Cole, Eleventh Edition, 2003.
3) Richard A. Johnson, "Probability and Statistics for Engineers", Prentice Hall of India, Seventh Edition, 2005.

CS 631

PROGRAMMING LAB –I

(C++ PROGRAMMING)

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessional	25 Marks

1. Finding maximum minimum and sum of given set of numbers.

2. Sorting programs.
3. Programs for finding the number of words, sentences in the given text as input.
4. Functions for matrix operations.
5. Recursive functions for greatest common divisor
6. Recursive Implementation of Tower of Hanoi.
7. Classes for Bank Account, Student Information, Library Catalogue.
8. Creation of Complex class with operator overloading.
9. Creation of Inheritance hierarchy for graphic shapes. .
10. Template functions for Min () and Max () for finding *minimum* and *maximum* in a list
11. Programs demonstrating pure virtual functions, multiple inheritances and exception handling.

CS 632

PROGRAMMING LAB -II
(EIT Lab)

Instruction	3 Periods per week
Duration of University Examination	3 Hours
University Examination	50 Marks
Sessional	25 Marks

At the end of the course, students should be able to:
I. Identify and describe the relationships and role of the components of the "Logical' diagram of the computer. (e.g. processor, RAM, ROM, BIOS, input, output, storage.)

2. Relate the "logical" diagram of a computer system to the "physical" system by identifying physical components of a computer and describing their purpose. (e.g. the processor, memory chips, motherboard, disk drives, and controller cards such as AGP board, network cards, sound card, as well as parallel and serial ports etc) "-

3. Assemble the computer which they will use and load the OS with partitions for Windows and Linux, configure for network connection

4. Troubleshoot his/her PC from time to time

5. Install/Uninstall SW/HW on his/her PC from time to time

6. Identify and distinguish between various types of application software. by describing and using them. (e.g. word processor, spreadsheet, database, browser, mailers etc.)

7. MS Word: Create documents with standard formatting commands, single/multi column, insert pictures/objects, drawings, hyperlinks, header/footer, and tables. No macros.

8. MS Power Point: Create presentations with preset animations, using different layouts, backgrounds, slide master, insert pictures/objects, drawings, hyperlinks, header/footer, tables

9.. MS Excel: Creating worksheets with various kinds of data, making charts, conditional formatting, awareness of the various functions- statistical, date/time, math/trig etc, ability to explore (help) and use these functions if need be, demonstration through some common functions like sum, average, standard deviation, logical and information.

10. HTML: Should be able to create their web-page (title, text, frames, hyperlinks to some sites, pictures, lists, tables, fonts and color) without using any web authoring tools.

11. Distinguish between various commercially available systems by relating the cost to features available on each system

12. Be able to use the following list of commands in Linux:

alias	cp	ftp	man	talk
banner	date	gv	mkdir	telnet
bc	diff	gunzip	more	unzip
bg	dir	head	mv	vi
cal	display	history	passwd	vim
cat	df	id	pine	vimtutor
cc	du	indent	ps	wall
cd	echo	dill	pwd	wait
chgrp	exit	last	reboot	whereis
chmod	fg	login	rm	who
clear	file	logname	rmdir	whoami
chfn	finger	ln	shutdown	write
chown	find	logout	tail	zip

cmp	gzip	ls mail	tar	ands