Madhya Pradesh Bhoj Open University

Ordinance No. 6

Master of Computer Application and other programmes in Modular form

The Master in Computer Application (MCA) is a three years sessions and 96 credit programme covering courses of 32 credit in each session. This is sequential modular programme where a successful student earns a Post Graduate Diploma in Computer Application (PGDCA) in the first session, Advance Diploma in Computer Application (ADCA) in the Second session and MCA in the third session.

Course Structure

PGDA (First one year session) : Four course each of 6 credits on Introduction to Software, Data Structure through "C" and "PASCAL", Elements of Systems Analysis and Design and Computer Fundamentals. 2 courses of each of 4 credits on File Structure and Programming in COBOL and Data Base Management Systems.

ADCA (second year session): Two course on Numerical and Statistical Computing and Data Communication and Network each of 6-credits. One 4 credits course on Operational Research. Two courses on Discrete Mathematics and Software Engineering each of 6 credits. One 4 credits course on Accounting and Finance on Computer.

MCA (third year session): One Project work of 8 credits and following additional courses / project work each of 4 credits. Computer Architecture, Object oriented Systems, Additional Project work, Intelligent Systems, Relational Database Management Systems and Operating Systems.

The delivery of the course will consist of course material, A/V support, contact classes, practical sessions and continuous study and experience through assignments. In between every group of three students 180 hours of computer time will be made available per one year session of study. A minimum attendance of 75% in practical sessions will be essential. There will be a session end examination for each course with a weightage of 70% and weightage for assignments would be 30%. The assignments would be a mix of Tutor Marked Assignments, Practical Assignments and Project which is differ from course to course. The maximum period of each of the sessions is two years.

In order to be successful in a course a minimum of 40% should be scored both in continuous assessment and in session end examination separately with an aggregate of 50%. For passing in any programme one has to be successful in all the courses separately. Successful candidates in every programme shall be placed in I class with distinction if they score an aggregate of 75% or more, those who score less than 75% and 60% or more shall be placed in I class. The remaining successful candidates shall be placed in II class.

The Minimum qualification for admission would be graduate from any recognised University / Institute.

CS-01 Computer Fundamentals

Computer fundamentals is the first course in the PGDCA programme. The basic objective of the course of this course is to introduce the student to the computer and its terminology, and to guide him/her through the functioning of the black box termed as Computer, Therefore this course covers some introxluctory topics such as history of computers data representation boolean algebra etc and gradually guides the students to the computer architectural aspects. This course also covers details on the microprocessors. This course not only introduces you to these topics but takes you further down to the concept of recent most popular architectures such as parallel processing and Reduced Instruction Set Computers.

The practicals in this course are mainly focused on Assembly language logical organisation of computers and Assembly language The approximate timing needed for these practicals will be in the range of 30-60 hours. The course is supported by two video programs History of Computers and Introduction to Computers.

CS-02 Introduction to Software

Software is an important component of a computer system The abjective of this course is to introduce the various aspects of computer software It covers wide range of software related topics which include programming language concepts system software tools such as Assembler Compiler Linkers Loaders and Operating System Software engineering is an emerging discipline which deals with several approaches to reliable software development It has 6 blocks Block-1 deals with introduction of algorithm basic components of programming languages types of software an introduction to compilers and assemblers and graphic user interface Block-2 introduces principles of operating system i.e. process management memory management and file system Block-3 and 4 deals with the philosophy of UNIX Operating System Shell Programming System Administration Vi-editor and other command level details of UNIX Block-5 deals with the principles of software engineering software development analysis and maintenance and introduction to a CASE tool Block 6 is a Practical block on Lotus 1-2-3

CS-03 File Structure and Programming in COBOL

As the course title indicates this course deals with the programming language COBOL in detail COBOL is a powerful language specially in business applications It offers a lot facilities in cases of business oriented problems. There exist different versions of COBOL .Considering this particular problem the writing of materials of this course is done with all possible flexibilities of options in command/clauses /phrases ,etc so that the learners do not face problems with their compilers during execution of COBOL programs. The course consists of four blocks first two of which contain the theory part of COBOL and the last two contain practical problems and procedures An advanced concept of COBOL is presented including structured programming

concept The important elements of this course is an illustration with number of examples and practical problems of Data processing Table handling Sequential files. Sorting and Merging of files Character handling Report writer Subroutines Segmentation and Library facilities.

CS-04 Data Structures through 'C' and PASCAL'

The objective of the course is to introduce the basic concepts of data structure and discuss important featires of using two popular high level programming 'C' PASCAL Since data stucture is in essential component in the development of a Software the intention is to provide a wide range of topics on this subject with appropriate examples. The course is organised in the following manner.

Block 1 introduces the essential features of "C" and PASCAL Programming Legugues data types looping statements, bits wise operations recursion and string processing , pointers, etc.

Block 2 and 3 cover the essential and advanced features of "C" including its various construct , bit wise operations functions , macros etc.

Block 4 discusses elementary data structure component such as Arrays, Lists, Stacks, Qucues Graphs and uses.

Block 5 Is a discussion on advanced Data Structures such as Binary Tree, B-Tree, AVL-Tree etc. File Or – ganisations storage management techniques (Garbage Collection Compaction etc.

Block 6 presents simple and advanced searching and sorting techniques such as quick sort and Heap sort.

CS-5 Elements of Systems Analysis and Design

This course deals with the analysis design, development implementation and maintenance of computer based information systems. The earlier courses would have made the learner familiar with basic computer hardware and software concepts as well as a familiarity with some of the programming languages The programming experience acquired is complemented in this course with conoretc systems experience This would enable the learner to cope with the number of components in the systems development approach and enmesh them correctly to result in a successful project The first 3 Blocks of the course are a run though the basic stages of system development life eycle .The recent trend of acquiring computer systems is after with a view to provide management with relevant information A block in the course is thereloe exclusively devoted to MIS In order to strike a balance between the thcoretival and applied aspects of systems analysis, a number of case studies have been included in a special block so that they can serve as a vehicle for applying systems concepts. While working on the case study, a student would have an opportunity to put into a practical context the tools of analysis and design learned during the course and also in some cases modify the cases and suggest strategies for system improvement The cases are drawn from actual real life situations and reflect practical problems that would neatly integrate into the learning process. There is a final block on the emerging trends, as development of systems moves from an from to an industry. Some exposure is given in this block to organisational issues anising out of induction of computer

systems and the new capabilities that the systems analysts of temorrow must have when software would be in the from of multi-media and hyper media with greater empimistion Signals and sound-*`

as means of communication.

S-06 Data Base Management System

This is an introductory course to a subject which has recently gained a lot of importance Apart from cussing the conventional databases (Hierarchical, Network and Relational Database we have also touched upon the emerging trends in DBMS which includes object Oriented database distributed databases, cline server databases and knowledge database.

Another important feature of this course is discussing on file organisations of conventional databases there is a complete unit which discusses large number of file organisation rechniques such as sequential file organisation index sequential file organisation multi-key file organisation technique.

CS-07 Discrete Mathematics

Discrete Mathematics is a second semester course in the ADCA programme The basic objective of course is to discuss-

- Mathematics Logic
- Set Theory and functions including Fuzzy Sets
- Lattices and Boolean Algebra
- Application of Graph Theory to Computer Science

CS-08 Numerical &Statistical Computing

The objective of the course is to discuss the followings:

- Features of FORTRAN 77 and FORTRAN 90 programming languages
- Numerical Interpolation
- Differentiation and Integration
- Linear Non-linear and Ordinary Differential Equations

Statistical concepts and developing programmes to obtain required parameters for statistical analysis

CS-9 Data Communications and Networks

As the course title indicates this course deals with the data communication and networking systems The objective of this course is to discuss

- Different types of Networks Network protocols OSI Reference Models
- Data transmission Terminology Transmission Media and characteristics ,Data Encoding and Communication Techniques, Multiplexing Techniques and Communication Hardware
- Media Access Control and linkages which will cover Random Access Protocols like Slotted Aloha CSMA etc.
- Networks Layers, Transport Layers and Application Layer services
- It will also include topics on Internet ISDN,ATM and Mobile Network.

CS-10 Software Engineering

Software is an important component of a computer system Software Engineering is

an emerging discipline which deals with several approaches to reliable software development it enables it enables the students to relate to the emerging challenges and opportunities in the software filed

The main objective of the course is to discuss

- Software Crisis and various project models
- Case Tools
- Issues related to Software project management
- Software emerging principles etc

CS-51 Operations Research

Is a four credit course which introduces to Operations Research its overview the programming techniques-linear programming its methods and further application Inventory control–deterministise probabilistic models as well as queuing models are discussed at length. Due emphasis is laid on competitive situations and Simulations. Students are required to solve problems on a computer.

CS-54 Accounting &Finance on Computers

A 4 credit course discusses the accounting framework, cost management financial and investment analysis financial decisions understanding financial statement ect. All these concepts are to be assimilated with development and use of appropriate software.

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*Approved by Board Of Management in its vii meeting

**Approved by Coordination Committee in its meeting held on20-06-1996