Madhya Pradesh Bhoj (Open) University
ORDINANCE NO. 3

BACHELOR IN COMPUTER APPLICATIONS 3 YEAR DEGREE PROGRAMME

The Bachelor of Computer Applications (B.C.A.) Programme shall be of 96 credits, equally distributed over three sessions of one year each and with a weightage of 32 credits. Each credit. Each credit amounts to 30 hours of study comprising of all learning activities. The basic structure of the Programme is given below.

First Session	**Credits**
1. Foundation Course in English I	4
2. Foundation Course in English II	4
3. Foundation Course in Humanities and Social Sciences	8
4. Calculus	4
5. Elementary Algebra	2
6. Analytical Geometry	2
7. Accountancy I	4
8. Elements of Costing	4

Total Credits 32

Second Session	**Credits**
9. Foundation Course in Science and Technology	8
10. Accountancy II	8
11. Computer Fundamentals	6
12. Introduction to Software	6
13. File Structure and Programming in COBOL	4

Total Credits 32

Third Session	**Credits**
14. Data Structures through "C" and PASCAL	6
15. Elementary of System Analysis and Design	6
16. Database Management System	4
17. Data Communications and Networks	6
18. Software Engineering	6
19. Project (or course in lieu of)	4

Total Credits 32
Grand Total 96 Credits

The Courses at S.Nos. 1 to 10 are theory based while those from 11 to 19 will have both the theory and practical components. Approximately 180 hours of computer time has been allotted per student for the entire B.C.A. Programme. In the first year session there will be no practical component. In the second year approximately 60 hours of practical time is required and in the final year approximately 120 hours of practical time is required. A student will not be eligible to appear in the term end practical examination if the percentage of attendance in practical session falls below 75% similarly. A candidate will not be eligible to appear in the term end theory examination if his attendance in contact classes is less than 60%. The evaluation of the performance of the students will be based on two components : (i) continuous evaluation through assignments with a weightage of 30% and (ii) term-end examination having a weightage of 70% in order to be eligible for taking term-end examinations in a course. a student is also required to submit theree assignments (two tutor marked TMA and one computer marked CMA) for an eight credit course. two assignments for a four credit course and one assignment for a 2 credit course. The average score of the best two out of three for eight credit course and the better of the two assignments for a four credit course will be taken into account. However. for a two credit course one assignment is compulsory which will be taken into account. In language course there is no computer marked assignment.

Qualifying marks for next session : The minimum qualifying score in both continuous evaluation (assignments) and term-end examination is 35% marks separately in each course.

Overall Grading : the final score for each course is computed by combining continuous evaluation score and term-end examination score.

The components of the continuous assessment methodology would be mix of TMA, CMA. a practical assignment and a project.

All the assignments and term-end exams will be scored on a numerical marking scheme. Any component which has not been attempted would be treated as having a score of 0 (Zero) marks. The requirement for passing a course would be at least 40% in continuous evaluation and 40% in the term-end examinations. with an overall average of 50%. Passing all the courses is mandatory for the award of the B.C.A.

In order to be able to appear for the term-end examination. it is a necessary requirement that the students submit all the assignments according to the prescribed schedule. All the students will be required to give an undertaking to this effect and should it be later found that they had in fact not submitted the assignments as prescribed, the results for the Term-end examination will be treated as cancelled.

The practical assignments will be of 1-5 hours duration.

Project : assignment will required a combination of practical work and detailed work required in a TMA. A project report would be expected to be of 30 pages.

Students successfully completing the programme shall be placed in various categories as indicated below.

I division with distinction 75% pr above
I division 60% or above and less than 75%
II division 50% or above and less than 60%

Student having passed 10+2 examination with Mathematics from any recognized University or Board shall be eligible for admission to the B.C.A. Programme.

To be placed before the 2nd joint meeting of the Board of Management and Planning Board.

Madhya Pradesh Bhoj (Open) University
Certificate in Computing

1.   OBJECTIVE OF THE PRGRAMME

The objective of the programme is to acquaint the students with a first level global view about computers and to develop general skills required to handle computer systems in work places. In contrast to a large number of existing computer training programmes, the main emphasis of this programme will be on actual work experience on computers.

The programme shall consist of the following four courses each of one credit
1. the context
2. The technology
3. The tools
4. The applications

II.   Evaluation

(a)   Continuous evaluation through assignments with a weightage of 30%. The course 3, however will consist of computer marked assignment (CMA) with multiple choice question, and practical assignments with a weightage of 15% for each.

(b)   Term end written examination of 1.5 hours duration for each course with a weightage of 70%.

(c)   For the award of the certificate to a student it would be necessary that the student obtains a minimum of 40% marks of the maximum marks alloted for both the continuous assessment and term end examination components separately in every course with an overall minimum aggregate of 50%.

(d)   Submission of all the completed assignments and minimum of the 75% attendance in theory/practical contact classes will be an essential eligibility condition for appearing in the term end examinations.

(e)   successful completion of 10+2 (with Mathematics as one of the subjects) from any recognised University or Board or equivalent examination will be the minimum eligibility condition for admission to the course. Students without Mathematics in 10+2

could also be considered for admission provided they take a preparatory programme in Mathematics.

(f) Successful students with overall marks of 75% or above will be placed in the I division with distinction, those securing 60% and more but less than 75% will be placed in the I division and others in the second division.

III. COUNSELLING COMPONENTS
1. 2 hours of Theory and video sessions for 16 days.
2. 2.5 hours of practical sessions for the next 16 days.

Thus 40 hours of computer time (including 10 hours of demo) has been allotted for every student.

BCA

Contents

Brief description of the individual courses are given below :

Foundation Course in English I (FEG-1)

The main objective of this course is to improve your proficiency in English by developing your skills in reading, writing, listening and speaking.

the course is divided into four blocks of six units each. The first four units in each block deal with (i) reading comprehension, (ii) Vocabulary, (iii) grammar and usage, and (iv) writing. The last two units deal with listening and speaking. The units on listening and speaking have cassette recordings to accompany them. You can listen to them at the study centre assigned to your by the University.

FOUNDATION COURSE IN ENGLISH-2 (FEG-2)

The main objective of the course is to develop your composition skills in English, but practice will be given in other language skills also. The different kinds of composition included in this course are – Paragraphs, Expository composition, Argumentative composition, narrative composition. Descriptive composition, Notes, Reports and Summaries.

FOUNDATION COURSE IN HUMANITIES ADN SOCIAL SCIENCES (FHS-1)

The course is aimed at offering a basic notion of the social, economic, political, cultural and other related humanistic problems. We to back to the study of the primitive human beings and gradually take into account the evolutionary processes by studying the march to great ancient civilizations, social formations and systems i.e. from slavery to the present day democratic world. In certain fields the perspective is based on a world view of the various problems like aparthied, nuclear disamament, ecology, pollution, etc. Yet, within this framework the main concern remains the search for our own past, and analysis of our present, and mankinds plan for the future. Thus, our unique struggle against colonialism, cultural renaissance, etc., are the themes related to social transformation and national integration. An attempt has also

been made to familiarise you with the process of economic planning in India. This takes into account the strategies adaptedand the problems related to economic development and growth.

CALCULUS (MTE-01)

The present course deals with the calculus of functions of one variable. In this course we shall acquaint you with the basic techniques of differential and integral calculus. We shall also briefly trace the historical development of calculus. After introducing the concept of the derivative in the first block, we shall study its geometrical significance tin the second. The third block introduces
 the other important concept, that of an integral. The last block will give you an idea about some applications of these concepts.

ELEMENTARY ALGEBRA (MTE-04)

The aim of this course is to introduce you to some simple algebra. To start with we introduce you to various sets, and in particular to the set of complex numbers. Then we discuss algebraic methods for finding the roots of polynomials of degree less than 5. Next., we consider finite sets of linear equations and see how to solve them. One of the methods uses the concept of a determinant. We devote a unit to and see how to solve them. One of the methods uses the concept of a determinant. We devote a unit to this concept and method. Finally, we look at some well-known inequalities which are used in mathematics and other sciences. A special feature of this course is an appendix in Block-1. In this appendix we briefly discuss various mathematical symbols and methods of proof that you will use in any mathematical study that you undertake.

ANALYTICAL GEOMETRY (MTE-05)

This is a first level course. which is intended as a short introduction to conics and conicoids. the pre-requisite for this course is the knowledge of some elementry two-dimensional coordinate geometry though in the first unit we will briefly run through the amount of two-dimensional analytical geometry that we will need in the course.

The course consists of 3 blocks. In Block-1 we talk about conics and their properties. In Block-2 we discuss spheres, cones and cylinders. And finally, in Block-3, we take a detailed look at conicoids. Apart from the mathematical interest that this course has, conics and

conicoids are used in various areas of physics, astronomy, architecture, engineering and military science.

ACCOUNTANCY-I (ECO-02)

This course consists of five blocks containing 22 units in all. Thus course introduce you to the basic accounting concepts and framework. It covers the preparation of accounts of non-trading concerns and those from incomplete records. After studying this course, you should be able to :

- understand the whole process of accounting
- work out the net result of business operations by preparing final accounts for both trading and non trading concerns
- appreciate special features of accounting for consignments and joint ventures
- describe different methods of providing depreciation
- explain the need for making provisions and various kinds of reserves.

ELEMENTS OF COSTING (ECO-10)

This course on costing introduces you to the basic principles of ascertaining the cost of a product, job and a contract. It also explains various methods of controlling the key elements of cost viz. material, labour and overheads,. It consists of four blocks comprising 13 units. After studying this course, you should be and overheads. It consists of four blocks comprising 13 units. After studying this course, you should be able to :

- explain the nature and scope of costing
- identify various elements of cost and describe the methods of their ascertainment and control
- explain various methods of costing and their suitability for different idustries
- prepare cost sheet, showing total cost of a product and job
- reconcile the profits shown by cost sheet with the profit as per financial accounts

FOUNDATION COURSE IN SCIENCE AND TECHNOLOGY (FST-01)

In the first few units of this course, we trace the history of science from very ancient times to the modern period. We then describe the interaction between science and society-the way science has grown in particular socio-economic conditions and, in turn, how it has influenced changes in the society. We explain the special nature of scientific knowledge, as also the scientific Method. The units that follow deal with the world we live in, how it came into being, how life came into existence, the resources we have and our environmental concerns. We then go to examine how science and technology can help us to solve some of the problems that we face in India like those of food, agriculture, health, etc. The study of the human mind and social behavior will then be taken up along with the crucial role that information and communication play in the present day world. We will also explore the potentialities of modern scientific and technological development. We will sum up by describing the role of science and technology in national development, especially in the Indian context.

In other words, this course attempts to make you aware of what science is and what it can do ; how it has always been an integral part of human life and endeavour and its immense potential in solving out problems.

ACCOUNTANCY –II (ECO-04)

This course is an extension of ECO-02 (Accountancy I) and consists of eight blocks containing 30 units in all. It mainly deals with partnership and company accounts and includes the basic concepts of auditing After studying this course, you should be able to :

- prepare branch accounts
- ascertain the amount of insurance claims for stock lost in fire
- prepare accounts for hire purchase transactions
- work out the distribution of profits amongst partners, and incorporate necessary changes in accounts admission, retirement, death, etc. of a partner and the dissolution of a partnership firm
- record transactions relating to shares and debentures of a company and prepare its final accounts
- analyse financial statements and prepare fund flow statement
- explain basic concepts of auditing and internal control
- prepare audit plan, describe the conduct of vouchering of various transactions and the verification and valuation of assets and liablilities.

COMPUTER FUNDAMENTALS (DS-01)

Computer fundamentals is the first course in the PGDCA programme. The basic objective 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 introductory topics such as history of computers, data representation, boolean algebra, etc. and gradually leads 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 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 programms : History of Computer and Introduction to computers.

INTRODUCTION OF SOFTWARE)CS-02)

software is an important component of a computer system. The obhjective of this course is t ointroduce 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 softwares, an introduction to compiles 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 issues in software development, analysis and maintenance and an introduction to a CASE tool. Block 6 is a practical block on LOTUS 1,2 & 3.

FILE STRUCTURE AND PROGRAMMING IN COBOL (CS-03)

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 of 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 load is four credits. Two printed blocks contain the theory part 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 handing. Sequential files, Sorting and Merging of files, Character handling, Report writer, Subroutines, Segmentation and Library facilities.

DATA STRUCTURE THROUGH 'C' AND 'PASCAL' (CS-04)

The objective of the course is to introduce the basic concepts of data structure and discusses important features of two popular high level programming languages "C" and PASCAL. Since data structure is an 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 'PASCAL' programming languages, data types, looping statements, 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 advanced data structures component such as Arrays, Lists, Stacks, Queues Graphs and their uses.

Block 5 is a discussion on advanced Data structures, such as Binary Tree, AVL-Tree etc. Tree Structures, File Organisation storae management techniques (Garbage Collection, Compaction etc.).

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

ELEMENTS OF SYSTEMS ANALYSIS AND DESIGN (CS-05)

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 concrete systems experience. This would enable the learner to cope with the number of components in a systems development approach and enmesh them correctly to result in a successful project. The first 3 blocks of the course of the course are a run through the basic stages of a system development life cycle. The recent trend of acquiring computer systems is often with a view to provide management with relevant information. A block in the course is, therefore, exclusively devoted to MIS. In order to strike a balance between the theoretical 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 improvements. The cases are drawn from actual real life situations and reflect practical problems development of systems moves from an art form to an industry. some exposure is given in this block to organisation issues arising out of induction of computer systems, and the new capabilities that the systems analysts of tomorrow must have, when software would be in the form of multimedia and hyper-media with greater emphasis on visuals and sound as means of communication.

TATA BASE MANAGEMENT SYSTEM (CS-06)

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

Another important feature of this course is discussion on file organisations of conventional databases. There is a complete unit which discusses large number of file organisation techniques such as sequential file organisation, index sequential file organisation, random file organisation, multi-key file organisation technique.

DATA COMMUNICATIONS AND NETWORKS (CS-09)

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 class 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.

SOFTWARE ENGINEERING (CS-10)

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 the students to relate to the emerging challenges and opportunities in the software field.

The main objective of the course is to discuss –

- Software Crisis and various process models
- Case Tools
- Issues related to Software project management
- Software : Emerging Trends etc.

PROJECT (CS-11)

A student will have to do a project in the final year of his/her study or a course in lieu of the project.

As majority of the students are expected to work out a realistic project. It is suggested that the project is to be chosen which should have some direct relevance to day-to-day activity of the candidate in his/her institution.