

University of Pune

Revised Structure & Syllabi for Three Year Degree Programme of Bachelor of Computer Applications (B.C.A.)

1. The title of the programme will be Bachelor of Computer Application (B.C.A.) under Commerce Faculty .

The revised program will be introduced for -

- a) F.Y.B.C.A. from the academic year 2008-09
- b) S.Y.B.C.A. from the academic year 2009-10
- c) T.Y.B.C.A. from the academic year 2010-11

2. Objectives : The objectives of the Programme shall be to provide sound academic base from which an advanced career in Computer Application can be developed. Conceptual grounding in computer usage as well as its practical business application will be provided.

3. Eligibility for admission : In order to be eligible for admission to Bachelor of Computer Applications a candidate must have passed

- a. HSC (10+2) from any stream with English as passing Subject with minimum 45% marks in aggregate.
- b. Two years Diploma in Pharmacy Course of Board of Technical Education, conducted by Government of Maharashtra or its equivalent.
- c. Three Year Diploma Course (after S.S.C. i.e. 10th Standard), of Board of Technical Education conducted by Government of Maharashtra or its equivalent.
- d. MCVC
- e. Every eligible candidate has to pass Common Entrance Test to be conducted by the respective Institute/College.

4. Duration : The duration of the B.C.A. Degree Program shall be three years divided into six semesters.

5. The scheme of Examinations :

The BCA Examination will be of 3600 marks as given Below

- I) a) F.Y.B.C.A. (Sem I + Sem II) : 1200 marks
- b) S.Y.B.C.A. (Sem III + Sem IV) : 1200 marks
- c) T.Y.B.C.A. (Sem V + Sem VI) : 1200 marks

- II) For Theory Paper There Will Be 80:20 Pattern

80 Marks : University Exam

20 Marks : Internal Exam

For Practical And Project Examination

Sem I to VI : 100 marks

Sem I , III , V : External Assessment

Sem II , IV , VI : External Assessment

6. The Standard of Passing and Award of Class

In order to pass in the examination the candidate has to obtain 40 marks out of 100. (Min 32 marks must be obtained in University Examination .

The class will be awarded on the basis of aggregate marks obtained by the candidate for all three years examinations .

The award of class will be as follows :

Aggregate Percentage of Marks	Class
(i) Aggregate 70% and above First Class with Distinction.
(ii) Aggregate 60% and above but less than 70% First Class
(iii) Aggregate 55% and more but less than 60% Higher Second Class
(iv) Aggregate 50% and more but less than 55%. Second Class.
(v) Aggregate 40% and more but less than 50% Pass Class.
(vi) Below 40% Fail.

7. RULES OF A.T.K.T.

a) A student shall be allowed to keep term for the Second Year, if he/she has a backlog of not more than three theory & one practical or four theory heads of total number of subjects of the First year examination, which consist of First & Second Semester.

b) A student shall be allowed to keep term for the Third year, if he/she has no backlog of first Year & if he/she has a backlog of not more than three theory & one practical or four theory heads of total number of subject of the Second Year examination which consist of Third & Fourth Semester.

8. The Medium of Instruction and Examination (Written and Viva) shall be English.

9. The Semester wise Structure of the programme shall be as follows :

Semester – I

Course No.	Newly Proposed Subject
101	Business Communication
102	Principles of Management
103	Programming Principles and Algorithms
104	Computer Fundamental and Office Automation
105	Business Accounting
106	Computer Laboratory and Practical Work (OA+PPA)

Semester – II

Course No.	Newly Proposed Subject
201	Organizational Behavior
202	Elements of Statistics
203	'C' Programming
204	File Structure and Database Concepts
205	Cost Accounting
206	Computer Laboratory and Practical Work (C.P + DBMS)

Semester – III

Course No.	Newly Proposed Subject
301	Numerical Methods
302	Data Structure using C
303	Software Engineering
304	Management Accounting
305	RDBMS
306	Computer Laboratory and Practical Work (D.S + RDBMS)

Semester – IV

Course No.	Newly Proposed Subject
401	Networking
402	Visual Basic
403	Inventory Management (SAD)
404	Human Resource Management
405	Object Oriented Programming using C++
406	Computer Laboratory and Practical Work (VB + C++)

Semester – V

Course No.	Newly Proposed Subject
501	.NET Frameworks
502	Internet Programming and Cyber Law
503	Principals of Marketing
504	Core Java
505	Project work (VB)
506	Computer Laboratory and Practical Work (.NET + Core Java)

Semester – VI

Course No.	Newly Proposed Subject
601	E-Commerce
602	Multimedia Systems
603	Introduction to SysPro And Operating Systems
604	Advance Java
605	Project Work (Banking & Finance , Cost Analysis , Financial Analysis ,Payroll , EDP ,ERP etc.)
606	Computer Laboratory and Practical Work (Multimedia + Advanced Java)

Business Communication

Course Code: 101

Objectives:

- 1) To understand the concept, process and importance of communication.
- 2) To gain knowledge of media of communication.
- 3) To develop skills of effective communication - both written and oral.
- 4) To make students familiar with information technology.

No. of Lectures

Unit 1: Introduction to Communication

Meaning and Definition - Process - Functions - Objectives - Importance - Essentials of good communication - Communication barriers - Overcoming communication barriers

12

Unit 2: Types of Communication

Written - Oral - Face-to-face - Silence - Merits and limitations of each type

12

Unit 3: Business Letters

Need and functions of business letters - Planning & layout of business letter - Kinds of business letters - Essentials of effective correspondence -

05

Unit 4: Drafting of business letters

Enquiries and replies - Placing and fulfilling orders - Complaints and follow-up - Sales letters - Circular letters - Application for employment and resume

12

Unit 5: Oral Communication

Meaning, nature and scope - Principles of effective oral communication - Techniques of effective speech - Media of oral communication (Face-to-face conversation - Teleconferences - Press Conference - Demonstration - Radio Recording - Dictaphone - Meetings - Rumour - Demonstration and Dramatisation - Public address system - Grapevine - Group Discussion - Oral report - Closed circuit TV). The art of listening - Principles of good listening.

08

Unit 6: Information Technology for Communication

Word Processor - Telex - Facsimile(Fax) - E-mail - Voice mail - Internet – Multimedia - Teleconferencing - Mobile Phone Conversation - Video Conferencing - SMS - Telephone Answering Machine - Advantages and limitations of these types.

06

Topics Prescribed for workshop/skill lab

12

- i) Group Discussion
- ii) Mock Interview
- iii) Decision Making in a Group
- iv) Written Communication

Recommended Books:

- 1) *Business Communication - K. K. Sinha - Galgotia Publishing Company, New Delhi.*
- 2) *Media and Communication Management - C. S. Rayudu - Himalaya Publishing House, Bombay.*
- 3) *Essentials of Business Communication - Rajendra Pal and J. S. Korlhalli - Sultan Chand & Sons, New Delhi.*
- 4) *Business Communication (Principles, Methods and Techniques) Nirmal Singh - Deep & Deep Publications Pvt. Ltd., New Delhi.*
- 5) *Business Communication - Dr. S.V. Kadvekar, Prin. Dr. C. N. Rawal and Prof. Ravindra Kothavade - Diamond Publications, Pune.*
- 6) *Business Correspondence and Report Writing - R. C. Sharma, Krishna Mohan - Tata McGraw-Hill Publishing Company Limited, New Delhi.*
- 7) *Communicate to Win - Richard Denny - Kogan Page India Private Limited, New Delhi.*
- 8) *Modern Business Correspondence - L. Gartside - The English Language Book Society and Macdonald and Evans Ltd.*
- 9) *Business Communication - M. Balasubrahmanyam - Vani Educational Books.*
- 10) *Creating a Successful CV - Siman Howard - Dorling Kindersley.*

Principles of Management

Course Code 102

Objective - To provide a basis of understanding to the students with reference to working of business organization through the process of management.

On completion of the syllabi the student will understand the basic principles of management - will acquaint himself with management process, functions and principles. Student will also get the idea about new developments in management.

- | | No. of Lectures |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 1) Nature of Management:
Meaning, Definition, it's nature purpose, importance & Functions,
Management as Art, Science & Profession- Management as social System Concepts of
management-Administration-Organization | (8) |
| 2) Evolution of Management Thought:
Contribution of F.W.Taylor, Henri Fayol ,Elton Mayo , Chester Barhard
& Peter Drucker to the management thought. Various approaches to
management (i.e. Schools of management thought)Indian Management Thought | (8) |
| 3) Functions of Management: Part-I
Planning - Meaning - Need & Importance, types levels - advantages
& limitations.
Forecasting - Need & Techniques
Decision making - Types - Process of rational decision making &
techniques of decision making
Organizing - Elements of organizing & processes:
Types of organizations, Delegation of authority - Need, difficulties in
delegation - Decentralization
Staffing - Meaning & Importance
Direction - Nature - Principles
Communication - Types & Importance
Motivation - Importance - theories
Leadership - Meaning - styles, qualities & functions of leaders | (8) |
| 4) Functions of Management: Part-II
Controlling - Need, Nature, importance, Process & Techniques
Coordination - Need – Importance | (8) |
| 5) Strategic Management
Definition, Classes of Decisions, Levels of Decision, Strategy, Role of different Strategist,
Relevance of Strategic Management and its Benefits, Strategic Management in India | (8) |

6) Recent Trends in Management:

(8)

Social Responsibility of Management – environment friendly management
Management of Change
Management of Crisis
Total Quality Management
Stress Management
International Management

Books Recommended:-

- 1.. Essential of Management - Horold Koontz and Iteinz Weibrich -
McGrawhills International
2. Management Theory & Practice - J.N.Chandan
3. Essential of Business Administration - K.Aswathapa
Himalaya Publishing House
4. Principles & practice of management - Dr. L.M.Parasad, Sultan Chand
& Sons - New Delhi
5. Business Organization & Management - Dr. Y.K. Bhushan
6. Management: Concept and Strategies By J. S. Chandan, Vikas Publishing
7. Principles of Management, By Tripathi, Reddy Tata McGraw Hill
8. Business organization and Management by Talloo by Tata McGraw Hill
1. Business Environment and Policy – A book on Strategic Management/Corporate Planning By
Francis Cherunilam Himalaya Publishing House 2001 Edition

Principles of Programming And Algorithm

Course Code : 103

Objectives : 1) To Know the Basics Of Programming
2) To Understand how to use programming in day to day Applications.

Chapter No.	Name of Content	No. of lectures
1.0	Introduction to 'C' Language	1
	1.1 History	
	1.2 Structures of 'C' Programming	
	1.3 Function as building blocks	
2.0	Language Fundamentals	1
	2.1 Character set	
	2.2 C Tokens	
	2.3 Keywords	
	2.4 Identifiers	
	2.5 Variables	
	2.6 Constant	
	2.7 Data Types	
	2.8 Comments	
3.0	Operators	1
	3.1 Types of operators	
	3.2 Precedence and Associativity	
	3.3 Expression	
	3.4 Statement and types of statements	
4.0	Built-in Operators and function	2
	4.1 Console based I/O and related built-in I/O function	
	4.1.1 printf()	
	4.1.2 scanf()	
	4.1.3 getch()	
	4.1.4 getchar()	
	4.1.5 putchar()	
	4.2 Concept of header files	
	4.3 Preprocessor directives :	
	4.3.1 #include	

4.3.2 #define

5.0 Control structures 10

5.1 Decision making structures :

5.1.1 If

5.1.2 If-else

5.1.3 Nested If -else

5.1.4 Switch.

5.2 Loop Control structures :

5.2.1 While

5.2.2 Do-while,

5.2.3 for, Nested for loop

5.3 Other statements :

5.3.1 break

5.3.2 continue

5.3.3 goto

5.3.4 exit

6.0 Introduction to problem solving 10

6.1 Concept : problem solving

6.2 Problem solving techniques (Trial & Error, Brain storming, Divide & Conquer)

6.3 Steps in problem solving(Define Problem, Analyze Problem, Explore Solution)

6.4 Algorithms and Flowcharts (Definitions, Symbols)

6.5 Characteristics of an algorithm

6.6 Conditionals in pseudo-code

6.7 Loops in pseudo code

6.8 Time complexity: Big-Oh notation, efficiency

6.9 Simple Examples: Algorithms and flowcharts (Real Life Examples)

7.0 Simple Arithmetic Problems 15

7.1 Addition / Multiplication of integers

7.2 Determining if a number is +ve / -ve / even / odd

7.3 Maximum of 2 numbers, 3 numbers

7.4 Sum of first n numbers, given n numbers

7.5 Integer division, Digit reversing, Table generation for n, a^b

7.6 Factorial, sine series, cosine series, ${}^n C_r$, Pascal Triangle

7.7 Prime number, Factors of a number

7.8 Other problems such as Perfect number, GCD of 2 numbers etc

1. (Write algorithms and draw flowcharts)

7.9 Swapping

8.0 Functions 8

8.1 Basic types of function

8.2 Declaration and definition

8.3 Function call

8.4 Types of function

8.5 Parameter passing

8.5.1 Call by value

8.5.2 Call by reference

8.6 Scope of variables

8.7 Storage classes

8.8 Recursion.

Total 48

Referential Books:-

1. Let us C-Yashwant Kanetkar.
2. Programming in C- Balguruswamy
3. The C programming Lang., Pearson Ecl – Dennis Ritchie
4. Structured programming approach using C-Forouzah &Ceilberg Thomson learning publication.
5. Pointers in C – Yashwant Kanetkar
6. How to solve it by Computer – R. G. Dromy
7. Introduction to algorithms – Cormen, Leiserson, Rivest, Stein
<http://www.cs.utexas.edu/users/rpierce>
8. Peter Norton's Introduction to Computers – Tata MGHill

Computer Fundamental and Office Automation

Course Code : 104

- Objectives :
- 1) To Know the Basics Of Computer
 - 2) To Understand the Basics of Operating systems
 - 3) To Understand how to use software packages in day to day activities

Sr. No.	Chapter Details	No. of Lect.
1	Ch 1 : Introduction to Computers	12
	1.1 Introduction	
	1.2 Characteristics of Computers	
	1.3 Block diagram of computer	
	1.4 Types of computers and features	
	1.4.1 Mini Computers	
	1.4.2 Micro Computers	
	1.4.3 Mainframe Computers	
	1.4.4 Super Computers	
	1.5 Types of Programming Languages	
	1.5.1 Machine Languages	
	1.5.2 Assembly Languages	
	1.5.3 High Level Languages	
	1.6 Data Organization	
	1.6.1 Drives	
	1.6.2 Files	
	1.6.3 Directories	
	1.7 Types of Memory (Primary And Secondary)	
	1.7.1 RAM	
	1.7.2 ROM	
	1.7.3 PROM	
	1.7.4 EPROM	
	1.7.5 Secondary Storage Devices (FD, CD, HD, Pen drive)	
	1.8 I/O Devices	
	1.8.1 Scanners	
	1.8.2 Digitizers	
	1.8.3 Plotters	
	1.8.4 LCD	
	1.8.5 Plasma Display	
	1.9 Number Systems	
	1.9.1 Introduction to Binary, Octal, Hexadecimal system	
	1.9.2 Conversion	

	1.9.3 Simple Addition, Subtraction, Multiplication, Division	
2	Ch 2 : Algorithm and Flowcharts	8
	2.1 Algorithm	
	2.1.1 Definition	
	2.1.2 Characteristics	
	2.1.3 Advantages and disadvantages	
	2.1.4 Examples	
	2.2 Flowchart	
	2.2.1 Definition	
	2.2.2 Define symbols of flowchart	
	2.2.3 Advantages and disadvantages	
	2.2.4 Examples	
3	Ch 3 : Operating System and Services in O.S.	7
	3.1 Dos - History	
	3.2 Files and Directories	
	3.3 Internal and External Commands	
	3.4 Batch Files	
	3.5 Types of O.S.	
4	Ch 4 : Windows Operating Environment	3
	4.1 Features of MS – Windows	
	4.1.1 Control Panel	
	4.1.2 Taskbar	
	4.1.3 Desktop	
	4.1.4 Windows Application	
	4.1.5 Icons	
	4.2 Windows Accessories	
	4.2.1 Notepad	
	4.2.2 Paintbrush	
5	Ch 5 : Editors and Word Processors	4
	5.1 Basic Concepts	
	5.2 Examples : MS-Word	
	5.3 Introduction to desktop publishing	
6	Ch 6 : Spreadsheets and Database packages	8
	6.1 Purpose, usage, commands	
	6.2 MS-Excel	
	6.3 Creation of files in MS-Access	
	6.4 Switching between application	
	6.5 MS -PowerPoint	
7	Ch 7 : Linux	6
	7.1 File system	
	7.2 Linux Commands	
	7.3 Permission and inodes	
	7.4 I/O redirection	
	7.5 Pipes	
	7.6 VI Editor	

Referential Books :

1. Fundamental of Computers – By V. Rajaraman B.P.B. Publications
2. Fundamental of Computers – By P. K. Sinha
3. Computer Today- By Suresh Basandra
4. Unix Concepts and Application – By Sumitabha Das
5. MS- Office 2000(For Windows) – By Steve Sagman
6. Computer Networks – By Tennenbum Tata MacGrow Hill Publication

Business Accounting

Course Code: 105

Objective: To impart basic accounting knowledge

UNIT NO.	TOPICS	NO.OF LECTURES
1	Introduction: Financial Accounting-definition and Scope, objectives of Financial Accounting, Accounting v/s Book Keeping Terms used in accounting, users of accounting information and limitations of Financial Accounting.	4
2	Conceptual Frame work: Accounting Concepts, Principles and Conventions, Accounting Standards- concept, objectives, benefits, brief review of Accounting Standards in India, Accounting Policies, Accounting as a measurement discipline, valuation Principles, accounting estimates	6
3	Recording of transactions: Voucher system; Accounting Process, Journals, Subsidiary Books, Ledger, Cash Book, Bank Reconciliation Statement, Trial Balance. Depreciation: Meaning, need & importance of depreciation, methods of charging depreciation. .(WDV & SLM)	16
4	Preparation of final accounts: Preparation of Trading and Profit & Loss Account and Balance Sheet of sole proprietary business	12
5	Introduction to Company Final Accounts: Important provisions of Companies Act, 1956 in respect of preparation of Final Accounts. Understanding of final accounts of a Company.	4
6	Computerised Accounting : Computers and Financial application, Accounting Software packages. An overview of computerized accounting system - Salient features and significance, Concept of grouping of accounts, Codification of accounts, Maintaining the hierarchy of ledger, Generating Accounting Reports.	6
	TOTAL	48

Recommended Books :

1. Fundamentals of Accounting & Financial Analysis: By Anil Chowdhry (Pearson Education)
2. Financial accounting: By Jane Reimers (Pearson Education)
3. Accounting Made Easy: By Rajesh Agarwal & R Srinivasan (Tata McGraw –Hill)
4. Financial Accounting for Management: By Amrish Gupta (Pearson Education)
5. Financial Accounting for Management: By Dr. S. N. Maheshwari (Vikas Publishing House)

Organizational Behavior

Course Code: 201

Objective:

To enable the students to understand the impact that individual, group & structures have on behavior within the organizations and apply such knowledge towards improving organizational effectiveness.

	No. of Lectures
1. Fundamentals of Organizational Behavior	(8)
Nature, Scope, Definition and Goals of Organizational Behavior	
Fundamental Concepts of Organizational Behavior	
Models of Organizational Behavior	
Emerging aspects of Organizational Behavior: TQM, Managing Cultural Diversity, Managing the Perception Process	
2. Attitude Values and Motivation	(8)
Effects of employee attitudes	
Personal and Organizational Values	
Job Satisfaction	
Nature and Importance of Motivation	
Achievement Motive	
Theories of Work Motivation: Maslow's Need Hierarchy Theory, McGregers's Theory 'X' and Theory 'Y'	
3. Personality	(8)
Definition of Personality, Determinants of Personality	
Theories of Personality – Trait and Type Theories, The Big Five Traits, Mytes-Briggs Indicator, Locus of Control, Type A and Type B Assessment of Personality	
4. Work Stress	(8)
Meaning and definition of Stress, Symptoms of Stress	
Sources of Stress: Individual Level, Group Level, Organizational Level	
Stressors, Extra Organizational Stressors	
Effect of Stress – Burnouts	
Stress Management – Individual Strategies, Organizational Strategies	
Employee Counseling	
5. Group Behavior and Leadership	(8)
Nature of Group, Types of Groups	
Nature and Characteristics of team	
Team Building, Effective Teamwork	

Nature of Leadership, Leadership Styles
Traits of Effective Leaders

6. Conflict in Organizations

(8)

Nature of Conflict, Process of Conflict
Levels of Conflict – Intrapersonal, Interpersonal
Sources of Conflict
Effects of Conflict
Conflict Resolution

Books Recommended:-

1. Organizational Behavior Text, Cases and Games- By K. Aswathappa, Himalaya Publishing House, Mumbai, Sixth Edition (2005)
2. Organizational Behavior Human Behavior at Work By J. W. Newstrom, Tata McGraw Hill Publishing Company Limited, New Delhi, 12th Edition (2007)
3. Organizational Behavior - By Fred Luthans
4. Organizational Behavior - By Super Robbins
5. Organizational Behavior - Anjali Ghanekar
6. Organizational Behavior Fundamentals, Realities and Challenges
By Detra Nelson, James Campbell Quick Thomson Publications
7. Organizational Behavior through Indian Philosophy
By N. M. Mishra, Himalaya Publication House

Elements of Statistics

Course Code : 202

- Objectives :**
- 1.To understand the concept of population and sample.
 - 2.To use frequency distribution to make decision.
 - 3.To understand and to calculate various types of averages and variation.
 - 4.To use the concept of probability in business.
 - 5.To understand the concept and importance of statistical quality control.

Marks : 100

No. of Lectures

Unit1. Population, Sample and Data Condensation: (5)

Definition and scope of statistics, concept of population and sample with Illustration, Raw data, attributes and variables, classification, frequency distribution, Cumulative frequency distribution.

Unit 2. Measures of Central Tendency: (8)

Concept of central Tendency, requirements of a good measures of central tendency, Arithmetic mean, Median, Mode, Harmonic Mean, Geometric mean for grouped and ungrouped data.

Unit 3. Measures of Dispersion: (8)

Concept of dispersion, Absolute and relative measure of dispersion, range, variance, standard deviation , Coefficient of variation.

Unit 4. Permutations and Combinations: (6)

Permutations of 'n' dissimilar objects taken 'r' at a time (with or without repetitions). ${}^n P_r = n! / (n-r) !$ (without proof). Combinations of 'r' objects taken from 'n' objects. ${}^n C_r = n! / (r! (n-r) !)$ (without proof) . Simple examples , Applications.

Unit 5. Sample space , events and Probability (13)

Experiments and random experiments. Ideas of deterministic and non-deterministic experiments. Definition of - sample space, discrete sample space, events. Types of events, Union and intersections of two or more events, mutually exclusive events, Complementary event, Exhaustive event. Simple examples. Classical definition of probability, Addition theorem of probability without

proof (upto three events are expected), Definition of Conditional Probability Definition of independence of two events ,simple numerical problems.

Unit 6. Statistical Quality Control :

(8)

Introduction, control limits, specification limits, tolerance limits , process and product control. Control charts for X and R. Control charts for number of defective (np- chart), control charts for number of defects (c- chart)

Recommended Books :

- 1) S.C. Gupta - Fundamentals of Statistics – Sultan chand & sons, Delhi.
- 2) D.N. Elhance – Fundamentals of Statistics – Kitab Mahal, Allahabad.
- 3) Montgomery D.C. – Statistical Quality Control
John Wiley and sons.
- 4) Goon, Gupta and Dasgupta – Fundamentals of Statistics - The world press
private ltd. , Kolkata.
- 5) Hogg R.V. and Craig R.G. – Introduction to Mathematical
Statistics Ed 4 (1989) - Macmillan Pub. Co. New York .
- 5) Gupta S.P. – Statistical Methods, Pub – Sultan Chand and sons
New Delhi

‘C’ Programming

Course Code : 203

Objectives : 1) To Know the concepts of “ C ” Programming
2) To Understand how to use programming in day to day Applications.

No. of Lectures

1.0	Arrays 1.1 Definition, declaration and initialization of one dimensional array 1.2 Accessing array elements 1.3 Displaying array elements 1.4 Sorting arrays, 1.5 Arrays and function, 1.6 Two-Dimensional array 1.6.1 declaration and initialization 1.6.2 accessing and displaying 1.6.3 memory representation of array 1.6.3.1 row major, 1.6.3.2 Column major. 1.7 Multidimensional array	8
2.0	Pointers 2.1 definition and declaration, Initialization 2.2 indirection operator, address of operator 2.3 pointer arithmetic 2.4 dynamic memory allocation 2.5 arrays and pointers 2.6 function and pointers	7
3.0	Strings 3.1 Definition, declaration and initialization of strings 3.2 standard library functions : 3.2.1 strlen() 3.2.2 strcpy() 3.2.3 strcat() 3.2.4 strcmp() 3.3 Implementation without using standard library	7

	functions	
4.0	Structures 4.1 Definition and declaration 4.2 Variables initialization 4.3 Accessing fields and structure operations 4.4 Nested structures 4.5 Union 4.5.1. Definition and declaration. 4.6 Differentiate between Union and structure	8
5.0	Introduction C Preprocessor 5.1 Definition of Preprocessor 5.2 Macro substitution directives 5.3 File inclusion directives 5.4 Conditional compilation.	2
6.0	Bitwise Operators 6.1 Bitwise operators 6.2 Shift operators 6.3 Masks 6.4 Bit field	1
7.0	File handling 7.1 Definition of Files, Opening modes of files 7.2 Standard function: 7.2.1 fopen() 7.2.2 fclose() 7.2.3 feof() 7.2.4 fseek() 7.2.5 rewind() 7.3 Using text files: 7.3.1 fgetc() 7.3.2 fputc() 7.3.4 fprintf() 7.3.5 fscanf()	6
8.0	Command line arguments	1
	Total	40

Referential Books:-

1. Let us C-Yashwant Kanetkar.
2. Programming in C- Balguruswamy
3. The C programming Lang., Pearson Ecl – Dennis Ritchie
4. Structured programming approach using C-Forouzah & Ceilberg Thomson learning publication.

5. Pointers in C – Yashwant Kanetkar

File Structure and Database Concepts

Course Code : 204

Objectives : 1) To Know the Fundamentals of Databases
2) To Understand how to use Databases in day to day Applications.

Unit No.	Chapter Details	No. of Lect.
1.	File Structure and Organization	6
	1.1 Introduction	
	1.2 Logical and Physical Files	
	1.2.1 File	
	1.2.2 File Structure	
	1.2.3 Logical and Physical Files Definitions	
	1.3 Basic File Operations	
	1.3.1 Opening Files	
	1.3.2 Closing Files	
	1.3.3 Reading and Writing	
	1.3.4 Seeking	
	1.4 File Organization	
	1.4.1 Field and Record structure in file	
	1.4.2 Record Types	
	1.5 Types of file organization	
	1.5.1 Files of Unordered Records (Heap Files)	
	1.5.2 File of Ordered Records (Sorted Files)	
	1.5.3 Hash Files	
	1.6 Over View of Indexes	
	1.6.1 Dense Index	
	1.6.2 Sparse Index	
2.	Tree Structured Indexing	3
	2.1 Introduction	
	2.2 Index Sequential Access Method (ISAM)	
	2.2.1 Structure of index sequential File	
	2.3 B+ Tree : A Dynamic Index Structure	
	2.3.1 Operations on B+ Tree	
	a. Search	
	b. Insertion	
	c. Deletion	
3.	Database Management System	6
	3.1 Introduction	
	3.2 Definition of DBMS	
	3.3 file processing system Vs DBMS	
	3.3.1 Limitation of file processing system	

	3.3.2 Comparison of File processing system and DBMS	
	3.4 Advantages and Disadvantages of DBMS	
	3.5 Users of DBMS	
	3.5.1 Database Designers	
	3.5.2 Application programmer	
	3.5.3 Sophisticated Users	
	3.5.4 End Users	
	3.6 Capabilities of good DBMS	
	3.7 Overall System structure	
4.	Data Models	10
	4.1 Introduction	
	4.2 Data Models	
	4.2.1 Object Based Logical Model	
	4.2.2 Record Base Logical Model	
	a. Relational Model	
	b. Network Model	
	c. Hierarchical Model	
	4.3 Entity Relationship Model	
	4.3.1 Entity Set	
	4.3.2 Attribute	
	4.3.3 Relationship Set	
	4.4 Entity Relationship Diagram (ERD)	
	4.5 Extended features of ERD	
5.	Relational Databases	8
	5.1 Introduction	
	5.2 Terms	
	a. Relation	
	b. Tuple	
	c. Attribute	
	d. Cardinality	
	e. Degree	
	f. Domain	
	5.2 Keys	
	5.2.1 Super Key	
	5.2.2 Candidate Key	
	5.2.3 Primary Key	
	5.2.4 Foreign Key	
	5.3 Relational Algebra	
	5.3.1 Operations	
	a. Select	
	b. Project	
	c. Union	
	d. Difference	
	e. Intersection	
	f. Cartesian Product	

g. Natural Join

6.	SQL (Structured Query Language)	10
	6.1 Introduction	
	6.2 History Of SQL	
	6.3 Basic Structure	
	6.4 DDL Commands	
	6.5 DML Commands	
	6.6 Simple Queries	
	6.7 Nested Queries	
	6.8 Aggregate Functions	
	6.9 Clauses	
7.	Relational Database Design	5
	7.1 Introduction	
	7.2 Anomalies of un normalized database	
	7.3 Normalization	
	7.4 Normal Form	
	7.4.1 1 NF	
	7.4.2 2 NF	
	7.4.3 3 NF	
	<u>Total</u>	48

References:

- 1) Database System Concepts By Henry korth and A. Silberschatz
- 2) An Introduction to Database System by Bipin Desai
- 3) File Structure by Michael J. Folk, Greg, Riccardi
- 4) Teach Yourself SQL in 14 days by Jeff Parkins and Bryan Morgan
- 5) Introduction to Postgresql Wrox Publication

Cost Accounting

Course Code : 205

Course Title : Cost Accounting

Objectives: 1) To Impart the Knowledge of Basic cost concepts, element of cost & Preparation of Cost Sheet.
2) To provide basic knowledge of important Methods & Techniques of costing.

Level of Knowledge : Basic understanding of the subject.

<u>Units</u>	<u>Topics</u>	<u>Teaching Hrs</u>
<u>Unit 1: Introduction.</u>		8
	1.1 Concept of cost, costing, cost Accounting & Cost Accountancy	
	1.2. Limitations of Financial Accounting	
	1.3. Origin and objectives of cost Accounting	
	1.4. Advantages and Limitations of Cost Accounting	
	1.5. Difference between Financial and Cost Accounting	
	1.6. Cost Unit & Cost Centre	
<u>Unit 2: Elements of cost</u>		8
	2.1. Material, Labour and other Expenses	
	2.2. Classification of cost & Types of Costs	
	2.3. Preparation of Cost Sheet	
<u>Unit 3: Methods of Costing (Theory Only)</u>		14
	3.1. Job Costing – Meaning, Features, Advantages and Limitation	
	3.2. Contract Costing – Basic Concepts	
	3.3. Process Costing - Meaning, Features, Normal and Abnormal Loss/ Gains	
	3.4. Operating Costing – Meaning, Features & Objectives	
<u>Techniques of Costing</u>		
Unit 4.	Budget and Budgetary Control- Definition, Meaning and objectives of Budgetary control Advantages and disadvantages of Budgetary Control Types of Budget	6
Unit 5.	Marginal Costing – Meaning and Various Concepts - Fixed Cost Variable Cost, Contribution, P/V Ratio, Break Event Point, Margin	6

Unit 6.	of Safety Standard Costing- Definition and Meaning of Various Concepts Advantages and Limitations of Standard Costing Variance Analysis – Material and labour Variances only	6
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Total Periods 48

Area of Practical problems:

Simple Problems on

- 1) Cost Sheet
- 2) Techniques of Costing
 - I) Marginal Costing
 - II) Budget and Budgetary Control – Flexible and Cash Budget
 - III) Standard Costing – Material and Labour Variances only

Allocation of Marks:

- Theory – 50%
Practical Problems – 50%

Compulsory one industrial visit for updating practical knowledge.

Books, Journals and Website Recommended: -

Books -

1. Advanced cost Accounting by Saxena and Vasistha.
2. Advanced cost Accounting by S.P.Jain and Narong.
3. Cost Accounting by S.N.Maheshwari
4. Cost Accounting by Ratnam.
5. Practice in Advanced Costing and Management Accounting by
Prof. Subhash Jagtap
Nirali Prakashan, Pune.
6. Cost and Works Accounting II and III-
Prof. Subhasg Jagtap,
Prof.Pagar and Dr.Nare
K.S.Publication,Pune.
7. Cost Accounting – Bhatta HSM,Himalaya Publication
8. Cost Accounting – Prabhu Dev , Himalaya Publication
9. Advanced Cost Accounting – Made Gowda,Himalaya Publication

Journals – Management Accountant – The ICWA of India, Kolkatta

CD on Cost- sheet Prepared by Asian center for Research and Training

Website-

www.myicwai.com.