

SEMESTER-WISE COURSE STRUCTURE FOR BCA

SEMESTER I (w.e.f 2014-2015)

Course Number	Course Title	Credit Value	#Lec.	#Tut.	#Lab.	Weightage for EoTE/IA	EoTM
101	Fundamentals of Information Technology	5	3	2	-	60%/40%	Univ.
102	Database Management Systems	5	3	2	-	60%/40%	Univ.
103	C Programming - I	5	3	2	-	60%/40%	Univ.
104	Principles of Management	4	2	2	-	60%/40%	Univ.
105	Lab on MS- Office Suite	2	-	-	4	60%/40%	Univ.
106	Lab on C Programming - I	2	-	-	4	60%/40%	Univ.
107	General Course – English Language	2	2	-	-	Continuous Assessment	Institute
Total		25	13	8	8		

SEMESTER II

Course Number	Course Title	Credit Value	#Lec.	#Tut.	#Lab.	Weightage for EoTE/IA	EoTM
201	Computer Organization And Architecture	5	3	2	-	60%/40%	Univ.
202	Database Application with Oracle	5	3	2	-	60%/40%	Univ.
203	C Programming – II	5	3	2	-	60%/40%	Univ.
204	Financial and Management Accounting	4	2	2	-	60%/40%	Univ.
205	Lab on C Programming and Oracle - II	2	-	-	4	60%/40%	Univ.
206	Minor Project - I	2	-	-	4	60%/40%	Univ.
207	General Course II Business Communication	2	2	-	-	Continuous Assessment	Institute
Total		25	13	08	08		

SEMESTER III

Course Number	Course Title	Credit Value	#Lec.	#Tut.	#Lab.	Weightage for EoTE/IA	EoTM
301	Operating System	5	3	2	-	60%/40%	Univ.
302	Software Engineering	5	3	2	-	60%/40%	Univ.
303	Data Structures	5	3	2	-	60%/40%	Univ.
304	Mathematics	4	2	2	-	60%/40%	Univ.
305	Lab on Data Structures	2	-		4	60%/40%	Univ.
306	Minor Project -II	2	-	-	4	60%/40%	Univ.
307	General Course III Environmental Studies	2	2	-	-	Continuous Assessment	
Total		25	13	08	08		

SEMESTER IV

Course Number	Course Title	Credit Value	#Lec.	#Tut.	#Lab.	Weightage for EoTE/IA	EoTM
401	Computer Networks – I	5	3	2	-	60%/40%	Univ.
402	Software Testing	5	3	2	-	60%/40%	Univ.
403	Java Programming	5	3	2	-	60%/40%	Univ.
404	Statistics	4	2	2	-	60%/40%	Univ.
405	Lab on Java	2	-		4	60%/40%	Univ.
406	Minor Project -III	2	-	-	4	60%/40%	Univ.
407	General Course IV Aptitude – I	2	2	-		Continuous Assessment	Institute
Total		25	13	08	08		

SEMESTER V

Course Number	Course Title	Credit Value	#Lec.	#Tut.	#Lab.	Weightage for EoTE/IA	EoTM
501	Introduction to the Internet Technologies	5	3	2	-	60%/40%	Univ.
502	Object Oriented Analysis and Design	5	3	2	-	60%/40%	Univ.
503	C # Programming	5	3	2	-	60%/40%	Univ.
504	Combinotrics and Graph Theory	4	2	2	-	60%/40%	Univ.
505	Lab on Internet Technology and C # Programming	2	-		4	60%/40%	Univ.
506	Introduction to Linux Operating System	2	-	-	4	60%/40%	Univ.
507	General Course V Aptitude – II	2	2	-	4	Continuous Assessment	Institute
Total		25	13	08	12		

SEMESTER VI

Course Number	Course Title	Credit Value	#Lec.	#Tut.	#Lab.	Weightage for EoTE/IA	EoTM
601	Information Security	5	3	2	-	60%/40%	Univ.
602	Business Intelligence	5	3	2	-	60%/40%	Univ.
603	Website Development	5	3	2	-	60%/40%	Univ.
604	Operations Research	4	2	2	-	60%/40%	Univ.
605	Lab on Website Development	2	-		4	60%/40%	Univ.
606	Minor Project -IV	2	-	-	4	60%/40%	Univ.
607	General Course VI Technical Interview Skills	2	2	-	-	Continuous Assessment	Institute
Total		25	13	08	08		

SEMESTER I

101: Fundamentals of Information Technology

No. of Credits: 5

Objectives:

The main objective is to introduce IT in a simple language to all undergraduate students, regardless of their specialization. It will help them to pursue specialized programs leading to technical and professional careers and certifications in the IT industry.

The focus of the subject is on introducing skills relating to IT basics, computer applications, programming, interactive medias, Internet basics etc.

Learning Outcomes:

At the end of this course, student should be able to

- (a) Understand basic concepts and terminology of information technology.
- (b) Have a basic understanding of personal computers and their operations.
- (c) Be able to identify issues related to information security.

Pre-requisites:

Preliminary knowledge of computer, their operations and applications.

Text Books:

1. Computer Fundamentals by P.K.Sinha
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Unit I: Introduction to Computers:

Introduction, Definition, .Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer.

Unit II: Basic Computer Organization:

Role of I/O devices in a computer system.

Input Units: Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen,

Output Units: Monitors and its types. Printers: Impact Printers and its types. Non Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.

Unit III: Storage Fundamentals:

Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridge tape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives.

Unit IV: Software:

Software and its needs, Types of S/W. **System Software:** Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. **Application S/W** and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w.

Unit V: Operating System:

Functions, Measuring System Performance, Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.

Unit VI: Data Communication:

Communication Process, Data Transmission speed, Communication Types (modes), Data Transmission Medias, Modem and its working, characteristics, Types of Networks, LAN Topologies, Computer Protocols, Concepts relating to networking.

Unit VII: Business Data Processing:

Introduction, data storage hierarchy, Method of organizing data, File Types, File Organization, File Utilities.

Unit VIII: Computer Arithmetic:

Binary, Binary Arithmetic, Number System: Positional & Non Positional, Binary, Octal, Decimal, Hexadecimal, Converting from one number system to another , Converting from one number system to another , Converting from one number system to another.

102:Database Management Theory

No. of Credits: 05

Objectives: This is a foundational course on Data Modeling. The course aims to impart knowledge of the concepts related to database and operations on databases. It also gives the idea how database is managed in various environments with emphasis on security measures as implemented in database management systems.

Learning Outcomes: At the end of the course, student should be able to

- A) Understand the concepts of database and techniques for its management.
- B) Different Data Models at Conceptual and Logical level.
- C) Differentiate between the role of DBA and Data Architect
- D) Understanding Data Security standards and Methods

Pre-requisites: XII Standard Mathematics

Text Books:

Korth.(2006) Database Systems Concepts , Tata McGra-Hill, Fifth Edition

UNIT I: Introduction of Database Management System:

Difference between Data, Information, Data Processing & Data Management. File Oriented Approach, Database oriented approach to Data Management, Need for DBMS, Characteristic of Database, Database Architecture: Levels of Abstraction, Database schema and instances, 3 tier architecture of DBMS, Data Independence. Database users, Types of Database System. Database Languages, DBMS interfaces.

UNIT II: Data Modeling:

Data Models, Categories of Data Model, Logical Data Modeling: Hierarchical Data Model, Network Data Model, Relational Data Model, Advantages and Disadvantages of Logical Data Modeling. Conceptual Data Modeling: Entity Relationship Model, Entities, Attributes, Types of Attributes, Relationships, Relationship set, Degree of relationship Set, Mapping Cardinalities, Keys, ER Diagram Notations, Roles Participation: Total and Partial, Strong and Weak Entity Set.

UNIT III: Relational Algebra and Normalization:

Keys: Composite, Candidate, Primary, Secondary, Foreign, Relational Set Operations: Union, Intersect, Difference, Product, Select, Project, Divide, Assignment. Joins: Outer Joins, Inner Joins with example. Relational Algebra. CODD's Rules, Mapping conceptual model into Relational Model. Functional Dependencies, Decomposition, Lossy and Lossless Decomposition, Dependency Preserving Decomposition Advantages and Disadvantages of Normalization, Normal Forms(1NF, 2NF, 3NF, BCNF) Case Studies on Normalization.

UNIT IV: File Structures and Data Administration:

File Organization, Overview of Physical Storage Media, Magnetic Disk, RAID, Tertiary Storage, Storage Access, Data Dictionary Storage, Organization of File (Sequential, Clustering), Indexing and Hashing, Basic Concepts, indices, B+ Tree index file, B- tree index file, Static hashing, Dynamic Hashing, Data administration, Role and Responsibility of DBA, Creating/Deleting/Updating table space, Database Monitoring, User Management

UNIT V: Transaction and Concurrency Control

Single User and Multiuser systems, Multiprogramming and Multiprocessing, Basic Database access operations, Concept of transaction, transaction state, ACID properties, Schedules, Serializability of schedules., Concurrency Control, Need for Concurrency control, lock based protocols, timestamp based protocols, Multiple granularity, Multiple Version Techniques, Deadlock and its handling, Wait-Die and Wound-Wait, Deadlock prevention without using timestamps, Deadlock detection and time outs, Starvation

UNIT VI: Database Recovery and security Management:

Database Recovery, Types of Failures, Storage Structure: Volatile, Non Volatile and stable storage, Data access. Recovery and atomicity, Recovery Techniques Algorithms: Log Based Recovery, Check points, Shadow Paging, Recovery with concurrent transactions, Failure with loss of non-volatile storage, Basic data security principles, user privileges, data masking, encryption and decryption, Data security Implementation.

103: C- Programming – I

No. of Credits: 05

Objectives: This is a first course in programming. The objective of this paper is to teach the Programming Language C. However, the process of learning a computer language will also be emphasized. Emphasis is also on semantics and problem solving.

Learning Outcomes:

At the end of the course a student should be able to -

- (a) write good programs in C language
- (b) Understand and use C libraries
- (c) Effectively use of Arrays and functions

Pre-requisites: XII Standard Mathematics

Text Books:

E.Balagurusamy (2009), Programming with C , Tata McGraw Hill
Yashawant Kanetkar, let Us C, BPB Publication

UNIT I: Learning a Computer Language :

Natural Languages and Computer Languages- Symbols, Alphabet, Vocabulary and Reserved words, High level words and Identifiers, Sentences and Statements, Executable and Non-Executable Statements, Types of Executable Statements- Input Statements,

Assignment and Arithmetic Statements, Control Statements- Sequential, Selection, Iteration Statements, Output Statements, Concepts of a Program and subprogram, Procedures and functions, Syntactic, Semantic, and Logical Errors in a program, Program Correctness- Verification and Validation, Concept of Test Data

UNIT II: Introduction to computer Language C :

Concepts of Machine, Assembly, and Higher Level Languages, Origins of C, Characters and Character Set of C, Tokens in C, The function main

UNIT III : Statements in C :

Non-executable Statements in C- Comments and Type Declarations, Data types in C, Input and Output Statements in C- scanf(), printf (),Formatted input and output statements

UNIT IV : Operators, Precedence, and Associativity :

Operators and operands, Unary and Binary Operators, Concept of Expression, Arithmetic Expressions, Relational Expressions, Assignment Expressions, Evaluation of Expressions, Concepts of Precedence and Associativity, Table of Precedence and Associativity.

UNIT V : Programming Construct :

Selection Statement in C- if, if..else, conditional operator as a simplification of if..else, Key words case, switch, break, default, go to, Iteration Statement in C- while, for statement, do..while, continue, break

UNIT VI : Concept of a function :

Function declaration, Function Definition, and Function Use, Local/public variables, Variable Scope, Function types, actual parameters, formal parameters, Call by value, Storage Classes

UNIT VII : Arrays :

Definition, Random Access to elements -Capacity, Size, Operator [], initializing, reading into, writing to and traversing an array, Sorting, searching using array, Two-dimensional Arrays, Arrays as arguments to functions

UNIT VIII : Strings :

Strings in C and String manipulation functions, Input, output statements for strings, String as arguments to functions, Examples on String manipulation functions

104:Principles of Management

No. of Credits: 4

Objectives:

The objective is to acquaint undergraduate students with concept of management and enable to gain the understanding of process of business management.

Learning Outcomes:

At the end of this course, student should be able to

- (a) Understand the functioning of business organization and
- (b) Understand the functions and process business management

Pre-requisites: Preliminary knowledge of Business organization and its functions.

Books :

L.M. Prasad, Principles and Practice of Management, Sultan Chand and Sons.
P.C. Thripathy, P.N. Reddy, Principles of Management, Tata McGraw Hill

Unit 1 : Meaning, Nature, Scope and Importance – Definitions of Management, Management Vs. Administration, Levels of Management, Functions of management, Social Responsibility of Management

Unit 2 : Evolution of Management Studies – Early age, Industrial Revolution age, Scientific Management Age, Human Relations Age, Modern age

Unit 3 : Planning- Meaning, Importance, Steps involved in planning, Types of plan, Decision making

Unit 4 : Organization – Meaning, essential elements of an organization, Organization Structure, forms of organization, Authority & Responsibility, Delegation

Unit 5 : Direction – Staffing & Recruitment – sources and procedure, Co-ordination - process, Motivation- importance, difference between positive and negative motivation, leadership- functions and qualities

Unit 6: Control – meaning and characteristics of control, modern methods of control, financial control, quality control

105: Lab on MS-Office Suite

No. of Credits: 2

Course Description

MS Office Suite, Introduction focuses on beginning computer concepts, Windows operating system, Internet Explorer, Word, Excel, PowerPoint, and the basic integration of the components of this integrated Microsoft application.

Prerequisites

1. No Prerequisite

Course objectives and content

Upon completion of this course students will be able to:

- Demonstrate an advanced knowledge of the Word Processing package, MS Office and a knowledge of how to design & create effective and structured documents like technical reports, letters, brochures, etc.,
- Demonstrate the skills in the appropriate use of various features of the spread sheet package MS Excel and also to create useful spreadsheet applications like tabulated statements, balance sheets, statistical charts, business statements, etc.
- Demonstrate the skills in making an effective presentation with audio and video effects using the MS Excel package
- Draw graphical pictures, flow charts, block diagrams etc., using the drawing tools available in MS Word or MS Power Point and incorporate them into documents and presentations.

Course Syllabus

Unit-1: Information Technology Essentials, Windows, and Internet Explorer

- Verify the components of a typical computer system.
- Explore, maintain files, and customize the Window operating system.
- Review using the Internet Explorer.

Unit-2: MS Word 2010

- **Introduction**
Introduction to MSWord, Menus, Shortcuts, Document types
- **Working with Documents**
 - a. Opening Files – New & Existing, Saving Files
 - b. Formatting page and Setting Margins
 - c. Converting files to different formats : Importing, Exporting , Sending files to others
 - d. Editing text documents : Inserting , Deleting ,Cut, Copy, paste , Undo, Redo , Find, Search, Replace
 - e. Using Toolbars, Ruler, Icons and help

- **Formatting Documents**
 - Setting Font Styles
Font selection – style, size, color etc., Type face – Bold Italic, underline, Case settings, iv. Highlighting, Special symbols
 - Setting Paragraph style
Alignments, Indents, Line space, Margins and Bullets and Numbering
 - Setting Page Style
Formatting, Border & Shading, Columns, Header & footer, Setting Footnotes, Inserting manual Page break, Column break and line break, Creating sections and frames, Inserting Clip arts, inserting pictures and other files, Anchoring & Wrapping
 - Setting Document Styles
Table of Contents, Index, Page Numbering, data & Time, Author etc., Creating Master Documents
- **Creating Tables**
Table settings, Borders, Alignments, Insertion, deletion, Merging, Splitting, Sorting, Formula,
- **Drawing**
Inserting Pictures/Files etc., Drawing Pictures, Formatting & Editing pictures, Grouping and ordering, Rotating
- **Tools**
Word Completion, Spell Checks, Macros, Mail merge, Templates, Using Wizards, Tracking, Changes, Security

Unit-3: MS Power Point 2010

- Introduction
Opening new Presentation, Different presentation templates, Setting backgrounds, Selecting presentation layouts
- Creating a presentation
Setting presentation style, Adding Text to the presentation
- Formatting a presentation
Adding style, Color, gradient fills, Arranging objects, Adding Header & Footer, Slide background, Slide layout
- Adding Graphics to the presentation
Inserting pictures, movies, tables, etc into the presentation; Drawing Pictures using Draw
- Adding effects to the presentation
Setting Animation & transition effect, Adding audio and video,
- Printing Handouts and Generating standalone presentation viewer

Unit-4: MS Excel 2010

- **Introduction**
Spreadsheet & its Applications , Opening spreadsheet, Menus & Toolbars & icons, Shortcuts , Using help
- **Working with Spreadsheets**
Opening a File, Saving Files, Setting Margins

Converting files to different formats : i. Importing, Exporting and Sending files to others

- **Spreadsheet addressing** : Rows, Columns & Cells, Referring cells and Selecting cells
- **Entering and Editing Data**: Entering Data, Cut, Copy, paste, Undo, Redo, Find, Search & Replace
Filling continuous rows, columns, Inserting -Data, cells, column, rows & sheets, Manual breaks
- **Computing data** : Setting Formula, Finding total in a column or row, Mathematical operations(Addition, Subtraction, Multiplication, Division, Exponentiation), Using other Formula
- **Formatting Spreadsheets**:
Formatting – Cell, row, column & Sheet: Alignment, Font, Border & shading, highlighting values Hiding/Locking Cells
Worksheet : Sheet Name , Row & Column Headers, Row Height, Column Width, Visibility – Row, Column, Sheet , worksheet Security
Formatting – worksheet: Sheet Formatting & style - background, color, Borders & shading
Anchoring objects, Formatting layout for Graphics, Clipart etc.,
- **Working with sheets** :
Sorting, Filtering, Validation, Consolidation, Subtotal , Creating Charts, Selecting charts, Formatting charts, label, scaling etc.,
- **Using Tools**
Error Checking, Spell Checks, Macros, Formula Auditing, Creating & using Templates
- Tracking changes, customization, printing worksheet

Unit- 5: Integrate Word, Excel and PowerPoint to prepare business documents.

Example List of laboratory assignments:

MS Word

1. List the names of your 15 classmates –
 1. Give Bullets
 2. Numbers
 3. Sort the names alphabetically
2. Create a 3*6 table with the following data :

Rollno	MT1	MT2
R001	86	74
R002	67	64
R003	56	78
R004	90	48
R005	67	86

- a) Insert a row at the top
- b) Type the following in the first cell of the table:
Student Monthly Report Year 2010-2011 BVDU, IMED
- c) Merge the cells of the first row.
- d) The heading should be in bold.

- e) Apply borders to the table.
- f) Centre the data in each column.
- g) Add Shading effects to the table. (use different table formats)

3. Create given document in MS – Word and format that using all possible formatted tools in formatted tool bar.

4. Prepare your Resume.

Use following columns for Educational Qualifications

Sr. No.	Name of Exam	Board / University	Year of Passing	Percentage of Marks	Class
1	SSC				
2	HSC				

- 1) Design your Resume in attractive form.
- 2) Center the entire table.
- 3) Save your Resume.

5. Create a given document in MS-Word. Perform all the options in ‘Page setup’ window. Write the steps.

Route_id	Route_no	Origin	Destination	Fare	Distance	Capacity
101	33	Madurai	Madras	35	250	50
102	25	Trichy	Madurai	40	159	50
103	15	Thanjavur	Madurai	59	140	50
104	36	Madras	Bangalore	79	375	50
105	40	Bangalore	Madras	80	375	50
106	38	Madras	Madurai	39	250	50
107	39	Hydrabad	Madras	50	430	50

6. Use the following options of Table :

1. Insert, delete rows & columns
2. Table AutoFormats
3. Split & Merge Cells
4. Split table
5. Use Formula
6. Other options if any

- ❖ Sort Name Column
- ❖ Center the entire table
- ❖ Save & exit
- ❖

7. Create a file in MS Word in which create Diwali greeting using Clip Art,

Word Art & give proper message in your greeting.

8. Create a document with the name Try.doc and type the following:

Every cloud has a silver lining.

Absence makes the heart grow fonder

An apple a day keeps the doctor away.

- a) Change the spacing between lines to double.
- b) Indent the text by 1 inch from left margin.
- c) Number each line in the text (using bullets and numbering). The distance between the text and number should be set to 0.5.
- d) Mark the entire text and view it with different alignment setting : centered, right-aligned, left aligned and finally make it centered.
- e) Copy & paste the above three lines so as to fit in 2nd page and save the document.
- f) Number the pages as 1,2 in the document. The page number should appear in the footer area, should be right- alignment.

9. Create your bio data in MS – Word.

10. Create your time – table in MS – Word. Use options – Insert, Delete row, split and merge cells.

MS Excel

11. Create pay sheet for 5 employees.

12. Make use of the purpose of following functions in MS-Excel

ROUND(), SQRT(), MIN(), Lower(), ABS()

13. Create mark sheet for 5 students for 5 subjects in MS –Excel Calculate percentage marks. Draw graph.

Sr. no.	Subject1	Subject2	Subject3	Subject4	Subject5	Total	Percentage
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1

2

3

4

5

14. Make use of the purpose of following functions in MS-Excel

ROUND(), SQRT(), MAX(), AVERAGE(), ABS()

15. Create a list in Excel with the fields as CustCode, CustName, Address, OrderNo, OrderAmt, Discount, Tax, Gross Amount, Net Amount.

Calculate the following as

Discount is 10% of OrderAmt

Tax is 2% of OrderAmt

Gross Amount is = OrderAmt + Tax

Net Amount = Gross Amount – Discount

16. Create Invoice in Ms Excel for particulars.

FORMAT:

Sr. No.	Item	Price/Unit	Quantity	Amount
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17. Show the purpose of following functions in MS-Excel.

Max(), Count(), roman(), abs(), sqrt()

18. Create a list in excel with the fields

106:Lab on C Programming - I

No. of Credits: 2

Objective: The objective of this course is to develop logical abilities of students using C language as a vehicle. Students will be exposed to C programming language with an emphasis on semantics and problem solving.

Learning Outcomes:

1. provide foundation for programming
2. enable the students to analyze and efficiently solve the problems using C language

Prerequisites: XII Level Mathematics

Text Book: E. Balagurusamy, “Programming with C”

List of Laboratory Experiments:

Following is the list of problems expected to be solved using C Programming. As this list represents example problems; the problems discussed and given to solve are not restricts only to this.

1. Write a program to display “Welcome to Bharati Vidyapeeth University” on console.
2. Write a program to calculate the income-tax of an employee, where taxable income details are entered through the keyboard.
3. Write a program to calculate electricity-bill for a customer, where unit details are entered through the keyboard.
4. Write a program to display factorial of a given number.
5. Write a program to calculate a^b , where a and b are entered through the keyboard.
6. Write a program to check whether a given number is prime or not.
7. Write a program to find out series of prime numbers from a given range, where the range is entered by user.
8. Write a program to check whether a given number is Armstrong number or not.
9. Write a program to check whether a given number is Perfect or not.
10. Write a program to display all numbers between 1 and 100, which are divisible by 7.
11. Write a program to display the absent digits from a given number.
12. Write a program to print Fibonacci sequence up to a given number.
13. Write a program to convert decimal number to its binary, octal and hexadecimal equivalents.
14. Write a program to convert binary number to its decimal equivalent.
15. Write a program to reverse the digits of an integer.
16. Write a program to find LCM and GCD of given two integers.
17. Write a program to calculate prime factors of a given number.
18. Write a program to display sum of digits of given integer number.
19. Write a program to input a five digit number and display its last and first digits.

20. Write a program to convert rupees into thousands, hundreds and rupees.

21. Write a program to display the following pattern:

```
111111
 22222
   3333
    444
     55
      6
```

22. Write a program to display the following pattern:

```
      1
     2 1 2
    3 2 1 2 3
   4 3 2 1 2 3 4
```

23. Write a program to display Floyd's Triangle.

24. Write a function MaximumOfThree() which returns the maximum of its three parameters.

25. Write a function MinimumOfThree() which returns the minimum of its three parameters.

26. Write a function Factorial() to find factorial of given number.

27. Write a function IsPrime() to check whether a given parameter is prime or not (return 0 if prime and 1 if not).

28. Write a function SimpleInterest() to find simple interest on principal amount for N years with R rate of interest.

29. Write a function NoOfDigits() to return number of digits in given number.

30. Write a function Swap() to interchange the values of two variables.

31. Write a menu driven program using functions to calculate Square, Cube and Square-root of a given number.

32. Write a menu driven program using functions to convert a decimal number to its binary, octal and hexadecimal equivalents: DecimalToBinary(), DecimalToOctal(), DecimalToHex()

33. Write a function Pallindrome() to check whether a given number is palindrome or not (return 0 if palindrome and 1 if not).

34. Write a function to evaluate the following series up to n terms;
 $1/1! + 2/2! + \dots + n/n!$

35. Write a function Sin() to evaluate the following series up to first ten terms;
 $\sin(x) = x - (x^3/3!) + (x^5/5!) - (x^7/7!) + \dots$

36. Write a function to check whether a given number is sum of all of its divisors, i.e. n is sum of all t such that $1 \leq t < n$, and t divides n.

37. Write a function to calculate ${}^n C_m$.

38. Write a recursive function to find GCD of given two integers.

39. Write a recursive function to calculate factorial of a given number.

40. Write a recursive function to display first N terms of Fibonacci sequence.

41. Write a recursive function to compute sum of digits of a given integer number.

42. If A is an array of N elements then write recursive function to display the Power-set of A.

43. Write a program to copy the contents of one array into another in reverse order.

44. Write a menu driven program to insert and delete elements to an array of size N

45. Write a program to sort elements stored in an array.

46. Write a program to display all array elements in ascending order using selection sort.

47. Write a program to display all array elements in descending order using bubble sort.

48. Write a program to calculate largest and second largest from a set of N numbers.
49. Write a program to perform following operations on a matrix; addition, subtraction, multiplication, norm of matrix, saddle point, magic square, inverse and transpose
50. A square matrix, one having the same number of rows and columns, is called a diagonal matrix if it's only non-zero elements are on the diagonal from upper left to lower right. It is called upper triangular matrix if all elements below the diagonal are zeroes, and lower triangular matrix, if all the elements above the diagonal are zeroes. Write a program that reads a matrix and determines if it is one of the above mentioned three special matrices.
51. Write a program to read a line of characters from the user and count number of lines, words, spaces, tabs and characters in it.
52. Write a program that replaces two or more consecutive blanks in a string by a single blank. e.g. if the input is "Welcome to BVU" the output should be "Welcome to BVU".

107:General Course I

Business English

No. of Credits: 2

Objectives: The objective is to introduce Business English to undergraduate students for effective communication in business organization.

Learning Outcomes:

At the end of this course, student should be able to

- (a) Understand correct usage of English language and sentence
- (b) Understand how to converse in business situations and
- (c) Able to write effective e-mails.

Pre-requisites:

Preliminary knowledge of English Grammar.

Text Books:

English Grammar and Composition – Wren and Martin

Business Communication – Urmila Rai, S.M Rai, Himalaya Pub. House, 9th ed.

Unit 1 : Correct Usage of language

Agreement of the verb with the subject, Noun and Pronouns, Adjectives, Verbs, Adverbs, Conjunctions, Order of words, Punctuation, Spelling rules, The Formation of words – Compound words – Compound nouns, Compound adjectives, compound verbs, Primary Derivatives and Secondary Derivatives

Unit 2 : Structures of sentences

Unit 3 : Business English

Dealing with people – at work, customer service; Striking conversation – courteous talk, small talk, business meetings, party talk; Eliciting Information – eliciting information on government policies, decisions, laws-right to Information Act, Eliciting information during an interview

Unit 4 : Electronic Mailing

Art of mailing right; Making accepting and turning down offers; placing orders, responses, conveying regrets, sending firm reminders, acknowledging receipt.

Unit 5: Oral proficiency

Phonetics – elementary; impromptu, Group Discussions

Unit 6 : Telephone speaking skills, Presentation skills

Reference Books :

Scott Ober – Contemporary Business Communication, Biztara Publications

Sinha K K – Business Communication, Galgotia Publishing Company

Web References:

<http://www.businessenglishsite.com/general-business-english.html>

<http://www.englishclub.com/business-english/>

<http://www.better-english.com/exerciselist.html>

Semester II

201: Computer Organization and Architecture

(5 Credits, 3L+2T)

Objective: Main objective of this paper is to learn structure and functioning of various hardware components of digital computer. Also study the interactions and communication among these hardware components.

Learning Outcomes:

At the end of this course, student should be able to understand

- Simple machine architecture and the reduced instruction set computers.
- Memory control, direct memory access, interrupts, and memory organization
- Basic data flow through the CPU (interfacing, bus control logic, and internal communications).
- Number systems, instruction sets, addressing modes, and data/instruction formats.

Text Book(s): M Morris Mano Computer systems Architecture 3rd ed.(PHI Pub.)

UNIT 1.Introduction To Digital Computer – (10L)

Data Representation – Data Types – Complements – Arithmetic Operations – Representations – Fixed –Point, Floating – Point , Decimal Fixed – Point – Binary Codes- Logic Gates, Boolean Algebra, Map Simplification – Combinational Circuits: Half-Adder, Full Adder- Flip Flops - Sequential Circuits

Unit 2.Introduction To Digital Components And Micro Operations – (8L)

ICs – Decoders – Multiplexers – Registers – Shift Registers – Binary Counters – Memory Unit – Register Transfer Language – Register Transfer – Bus And Memory Transfers – Arithmetic, Logic And Shift Micro Operations , Arithmetic Logic Shift Unit.

Unit 3.Computerorganization And Programming – (10L)

Instruction Codes – Computer Registers – Computer Instructions – Timing And Control – Instruction Cycle – Memory Reference Instructions – I/O And Interrupt – Machine Language – Assembly Language – Assembler - Program Loops – Programming Arithmetic And Logic Operations – Subroutines – I/O Programming.

Unit 4: Memory Organization And CPU – (10L)

Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware – CPU: General Register Organization – Control Word – Stack Organization – Instruction Format – Addressing Modes – Data Transfer And Manipulation – Program Control, RISC

Unit5: Input – Output Organization – (7L)

Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer – Modes Of Transfer – Priority Interrupt – DMA – IOP – Serial Communication.

202: Applied Database Management Concepts using Oracle

No. of credits: 5

Objectives: The main objective is to teach the concepts related to database its techniques and operations. SQL (Structured Query Language) is introduced in this subject. This helps creates strong foundation for application of data design.

Learning Outcomes: At the end of this course, student should be able to (a) Simple Query using sample datasets (b) Complex queries using SQL.(c) Writing PL/SQL blocks

Pre-requisites: Concept of Database Management Systems

Text Books:

1. Ivan Bayross SQL, PL/SQL The Programming Language of Oracle 3rd Revised Edition BPB Publications
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Unit I: Introduction to Relational Database Management System:

DBMS VS RDBMS, CODD's Rules, Introduction to Oracle: History, Features, Versions of Oracle, Database Structure: Logical Structure and Physical Structure, Oracle Architecture: System Global Area Processes: Server Processes, Background Processes. Tools of Oracle.

Unit II: SQL and Components of SQL:

Defining a database in SQL, Components of SQL: DDL, DML, DCL, DQL, SQL query Rules, Data types, Keywords, Delimiters, Literals. DDL Commands – Defining a database in SQL, Creating table, changing table definition, removing table. Truncating Table. DML Commands- Inserting, updating, deleting data, DQL Commands: Select Statement with all options. Renaming table, Describe Command, Distinct Clause, Sorting Data in a Table, Creating table from a table, Inserting data from other table, Table alias, and Column alias.

Data Constraints: Primary key, Foreign Key, NOT NULL, UNIQUE, CHECK constraint

Unit III :Operators:

Arithmetic, Logical, Relational, Range Searching, Pattern Matching, IN & NOT IN Predicate, all, % any, exists, not exists clauses, Set Operations: Union, Union All, Minus, Intersect.

Unit IV: Joins and Oracle Functions:

Relating data through join concept. Simple join, equi join, non equi join, Self join, Outer join, Subqueries, Aggregate Functions , Numeric Functions, String Functions, Conversion functions, Date conversion functions, Date functions.

Unit V: Database Objects:

Index: Creating index, simple index, composite index, unique index, dropping indexes, multiple indexes on table, using rowid to delete duplicate rows from a table, Sequence: Creating sequence, altering sequence, dropping sequence. Views: Using and defining, modifying, deleting. Insert / Drop / filter view. Complex view.

Unit VI: Introduction to PL/SQL programming:

Introduction, Advantages, PL/SQL Block, PL/SQL Execution Environment, PL/SQL Character set, Literals, Data types, Variables, Constants, Displaying User Message on screen, Conditional Control in PL/SQL, Iterative Control Structure: While Loop, For Loop, Goto Statement.

Unit VII: Advanced Programming Techniques of PL/SQL:

Cursors: Introduction, Types of Cursors: Implicit Cursor, Explicit Cursors, Parameterized cursors, Programs on cursors,

Triggers: Introduction, Use of triggers, Types of Triggers, Creating triggers, Examples on Triggers,

Stored Procedures / Functions: Introduction, How oracle executes procedures/functions, Advantages, How to create Procedures & Functions, Examples.

Error Handling in PL/SQL Exception Handling & Oracle Engine, Oracles Named Exception Handlers, User Named Exception Handlers.

203: C- Programming – II

No. of credits: 05

Objectives : This is a Second course in programming. The objective of this paper is to teach the advanced concepts in C Language. Emphasis is on semantics and problem solving

Learning Outcomes : At the end of the course a student should be able to

- (a) Write good programs in C
- (b) Understand and use C libraries,
- (c) Effectively use Arrays and Pointers
- (d) Use Files in C programs, (e) Introducing Graphics Library functions

Pre-requisites: C- Programming – I

Text Books:

Kernighan and Ritchie, The C Programming Language, Tata McGraw Hill

E.Balagurusamy (2009), Programming with C, Tata McGraw Hill

Yashawant Kanetkar, Let Us C, BPB Publication

UNIT I : Recursive functions

Effect of function calls, Definition of recursive function, Tracing recursive function, Examples on recursive function

UNIT II : User Defined Data Types

Key word struct-, structure, declaring structure variable, Accessing structure members, array of structure, arrays within structure, Nesting of structure, size of structure, Examples based on practicing structure, Union – introduction, defining a union, access to members, Difference between Structure and Union, Key word enum and its uses, Key word typedef and its uses, Example on union.

UNIT III : Pointers

Direct and Indirect Access; need of pointers, de-referencing, constant and variable pointers, Semantics of array and function declarations. Using key word const in array declarations, Function pointers, pointers as arguments to functions and as return types, generic pointer void *, Parsing pointer declarations, Pointer to structure, union, Pointer to pointer, array of pointers, Array as pointer, Dynamic memory allocation – malloc(), calloc(), free(), realloc(), Examples.

UNIT IV : File Handling in C

Concept of a File-File attributes, File organizations, File Access, I/O functions, Defining and opening a file, closing a file, Input -Output operations on files, Programs to create and read files, Error handling functions : feof(), ferror(), Random access to files : ftell(), rewind(), fseek(), Examples to update and read data from file.

UNIT V : Preprocessor directives

Macros #define, #include - header files, extern storage class, Examples, Understanding stdio.h, Understanding assert.h, limits.h, stdlib.h, Understanding alloc.h and Dynamic Memory Management.

UNIT VI : Miscellaneous concepts

Bit-wise operators, Hardware Interface commands e.g. int86, inkey etc, Command line arguments

UNIT VII : Graphics in C

Display modes, Graphics drivers, Initialization in graph mode, <graphics.h> header file, functions in graphics library, Input and output in graphics mode.

204: Financial Management and Accounting

No. of Credit: 4

Objectives:

1. To orient the students to basic concepts of accounting. costs
2. To make them understand the techniques of management accounting
3. To make them understand the concepts of financial management
4. To give the dimensions of three aspects finance application background in IT packages

Learning outcome:

At the end of the course the students shall be able to

1. The student shall be able to have basic understanding necessary for development of software for accounting and cost and finance
2. Interrelation of concepts as dimensions of financial management process.

Prerequisites: Good understanding of nature of business expenses and income/revenue

Recommended Books:

1. Ashok Sehagal and Deepak Sehagal , Financial Accounting – Taxman
 2. Tulsian – Financial Accounting
 3. Jain Naramg – Cost Accounting Principles and Practice
 4. I.M. Pandey ,FinancialMangementVikas Publishing House
 5. Book Keeping and Accountancy, M.G. Patkar
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Syllabus:

Unit 1 : Introduction to Financial Accounting

Principles of double entry book keeping, preparation of journal , ledger, trial balance and final accounts (Trading and Profit and Loss Account and Balance Sheet) for a sole proprietor. Accounting concepts and conventions

Unit 2 : Introduction to Cost and Techniques

Concept of cost , classification of cost and preparation of cost sheet , Budgetary Control – concept and importance, Simple problems on flexible and cash budget

Unit 3 : Standard and Marginal Costing

Concept of Standard Cost , Variance , advantages and limitations , Computation of basic variances of material and labour cost , concept of marginal cost P/V ration . Contribution, BEP, Margin of Safety and problems on above

Unit 4 : Introduction to Financial Management :

Scope and Nature of Financial Management, Consideration while preparing financial plan.

Concept of Profit Maximization and Wealth Maximization .

Advantages and Limitation of Long Term Sources of Finance, Venture Capital

Unit 5 : Sources of Short Term Finance

Concept of inventory management and EOQ.

Concept of Working Capital and factors affecting working capital, simple problems on estimation of working capital.

Unit 6: Investment Decision

Concept of Time value of money, Risk and Return, Simple problems on Capital Budgeting Techniques – Simple Pay Back , Discounted Pay Back , NPV, ARR, Profitability Index

Ratio Analysis : (At theory level) significance of ratios with reference to examples of leverage ,profitability , activity, liquidity ratio

205: Lab on C Programming – II and Oracle

No. of Credits: 2

Objective: The objective of this course is to develop logical abilities of students using C language as a vehicle. Students will be exposed to C programming language with an emphasis on semantics and problem solving.

Learning Outcomes:

3. provide foundation for programming
4. enable the students to analyze and efficiently solve the problems using C language

List of Laboratory Experiments:

List of problems expected to be solved using C Programming and Oracle are to be given by faculty. The bellow gives few problems of C Programming II. As this list represents example problems; the problems discussed and given to solve are not restricts only to this.

53. Write a program to sort a set of names stored in an array in alphabetical order using pointers.
54. Write a program to delete all vowels from a sentence using pointers. Assume that sentence is not more than 80 characters long.
55. Write a program that will read a line and delete from it all occurrences of the word 'the' using pointers.
56. Write a program to count the number of occurrences of any two vowels in succession using pointers.
57. Implement following built-in functions as user-defined functions;
strlen() → mystrlen(), strcat() → mystrcat(), strcpy() → mystrcpy(), substr() → mysubstr, strcmp() → mystrcmp()
58. Write a program to find whether a string is a palindrome string or not.
59. Write a program to display contents of a file in uppercase letters.
60. Write a program to count characters, spaces, tabs and new lines in a file.
61. Write a program to copy the contents of one file to another file.
62. Write a program to receive strings from keyboard and write them to a file.
63. Write a program to read strings from a file and display them on screen.
64. Write a program to store data corresponding to a book (title, price and number of pages) using a structure and display the entire information.
65. Write a program to store day, month and year using a structure and determine tomorrow's date.
66. Write a program to display students list in ascending order.
67. Write a program to display mark-sheet of students using structure.
68. Write a Program to display shopping-bill of a customer using structure.
69. Write a program to shift an unsigned integer left if the count of number of 1s is positive and right if it's negative (create functions).
70. Write a program to copy the contents of one file to another file using command line arguments.

206: Minor Project-I

No. of Credits: 2

Objective: The objective of this course is to develop skills to solve a problem which requires more efforts than laboratory experiment; this also demands that students has to work in a group and distribute work to solve problem. Finally student document work as dissertation and evaluated it by panel of examiner. Examiner expected to evaluate on their work by testing the functionality of project and content of dissertation along with judging contribution of individual.

207 : Business Communication

No. of Credits : 2

Objectives: The objective is to acquaint undergraduate students with required communication skills.

Learning Outcomes:

At the end of this course, student should be able to

- (a) Understand the concept of communication and use of different media
- (b) able to make effective written and oral communication

Pre-requisites:

Preliminary knowledge of Business English and basic functioning of business organization

Books :

Business Communication – Urmila Rai, S.M Rai, Himalaya Publication House, 9th ed.
Taylor Shirley – Communication for Business, Pearson Education

Unit 1: Basic elements of Communication -Concept, Need and Importance, Objectives, Elements of communication, Process, Role of communication in Business, Barriers to communication- physical, semantic and language, socio-psychological, cultural barriers, principles of effective communication

Unit 2 : Types – Downward, Upward, Horizontal, grapevine communication, Verbal and Non-verbal Channels – advantages, Methods of communication – pictures, graphs & charts, maps, signs & symbols

Unit 3: Media and modes – conventional modes – mail, courier, hand delivery, telegraph, telex, modern communication technology – telephone, cellular phone, sms, voice mail, Fax, e-mail, teleconferencing, websites, notice board, hoardings and bill boards, newspaper and magazines, radio, film, television, internet, Choice of media

Unit 4 : Internal and external Communication-Purpose, Formal and Informal communication; Memoranda, Meetings, Notice of meeting, agenda, minutes, resolutions, Circulars , Press Release, Brochures and Product Manuals

Unit 5 : Written Communication- Essentials of effective correspondence, formats, types of business letters – enquiries and replies, sales letters, bank correspondence, job application, Report writing- structure of a report, types of reports

Unit 6 : Oral communication - Presentation skills, Group discussion skills, Negotiation skills, telecommunication skills,

Web References:

<http://www.englishclub.com/business-english/correspondence-samples.htm>

<http://www.writeexpress.com/writing-easy-letters.html>

<http://www.4hb.com/letters/>

<http://www.businessletters.in/>