

Objectives: The objective of this course is to familiarize students with complete Fundamentals and the

Class	Bachelor of Arts (Computer Application) semester first
Subject Code and Name	Paper A--Fundamentals of IT
Time	45 min
Internal /External Marks	05/30

carriers commonly used computing software. The course enables the students to be familiar with fundamentals of computer (Hardware/Software, O.S., number system).

Unit No	Topics	Content
I	<ul style="list-style-type: none"> • Computer Application • Computer Memory: 	<p>In the First topic Computer Appreciation, we discuss the topics related with the fundamental of computer like define computer,</p> <ul style="list-style-type: none"> • feature and • application of computer, • types of computer, • basic structure of Computer, <p>Computer memory, we discuss representation of information, the various types of Memory unit, Various input/output devices of computer, Network and types of network etc., In second topic we discuss the Disk operating system where we discuss various internal external command and Boot sequence and system file of operating system</p>
II	<ul style="list-style-type: none"> • Types of software • Introduction to Computer based Problem-solving 	<p>In the third topic Software, we discuss</p> <ul style="list-style-type: none"> • what are software, • various types of software • , Programming language and their types <p>This topic provides the details about various structured programming tools and methods to solve the problem using computer based approach.</p>
III	<ul style="list-style-type: none"> • Understanding Number System • Character Codes 	<p>This section belongs various number systems and character codes used for data representation in computers. For eg. , ASCII, EBCDIC and Unicode character sets, Computer arithmetic; Number systems: Decimal, Binary, Octal, Hexadecimal, Conversions between different</p>

		number systems
IV	<ul style="list-style-type: none"> • Understanding Operating System using DOS • Windows Operating System 	<p>We start new topic called Windows operating system where we discuss how work with s, DOS and versions of DOS, Booting sequence; Warm and Cold Boot; Concepts of files and directories, Wildcard characters, Types of DOS commands, Internal Commands: cls, copy con, type, ver, volume, prompt, path name, date, time, md, cd, rd, copy, Del; External Commands: doskey, format, unformat, xcopy, fdisk, attrib, chkdsk; Introduction to Config.Sys and Autoexec.Bat.</p>
References Books and Various web resources		
1	Books	<p>Computer Fundamental Rajaramam Computer Fundamental” P.K.Sinha Programming in C, McGraw Hills Publishers, New York</p>
2	Web Recourses	<p>Microsoft Virtual Academy Spoken Tutorials www.etutorplus.wordpress.com</p>

Class	Bachelor of Arts (Computer Application) semester I Paper B
Subject Code and Name	Application software
Time	45 min
Internal /External Marks	5/30

Objective: This course enables the students to get familiar with fundamentals of O.S. (DOS, windows) & app. s/w for word processing, worksheet preparation & making presentation.

Unit No	Topics	Content
I	<ul style="list-style-type: none"> • Microsoft word 	This entire section belong to Microsoft word where we learn Opening, Creating, Saving, Printing and Quitting Documents, Using the Interface (Menu Toolbars), Editing Text (Copy, Delete, Move), Finding and Replacing Text, Spell Check, Autocorrect; Auto text, Character formatting, Page formatting; Document Enhancement: Adding Borders and shading, Adding Headers and Footers, Setting up Multiple columns, Sorting blocks, Adjusting Margins and Hyphenating Documents, Creating Master Document, Creating Data Source, Merging Documents, Using Mail merge feature for labels and envelopes; Inserting Pictures , Tables , Working with equations
I	<ul style="list-style-type: none"> • Spreadsheets 	This entire section belong to Microsoft Excel where we learn Worksheet overview, Row, Column, Cells, Menus, Creating Worksheet, Opening, Saving, printing worksheet; Calculations, Auto fill, working with Formulae, Data formatting (number formatting, date formatting), Working with Ranges, Establishing Worksheet links; creating, sorting and filtering Data Base; creating chart, adding Titles, Legends etc. to charts, Printing Charts, creating Macros, Record Macros, Running Macros, Assigning Macros to Buttons, Functions (Statistical, financial, Mathematical, string,
III/IV	<ul style="list-style-type: none"> • Presentation Software • Databases 	In this final section we learn two topics Microsoft PowerPoint and MS access. In PowerPoint we start with Creating, saving, printing presentations; selecting design templates, animations and transitions, Auto content Wizard and in second section we start with what is a is a database? Creating database using Wizard

		or from scratch, creating tables using wizard, by entering data, using design view, saving, inserting, editing, Changing properties of fields, setting primary key
References Books and Various web resources		
1	Books	Mansfield Ron: MS Office, Tata McGraw Hill. 2. OOoAuthors Team : Getting Started with OpenOffice.org 3.3, Friends of OpenDocument 3. Singleton, Roderick G.: OpenOffice.org User Guide.
2	Web Recourses	www.etutorplus.wordpress.com spoken-tutorial

Class	B.A. (COMPUTER APPLICATIONS) SECOND SEMESTER-Paper A
Subject Code and Name	C PROGRAMMING LANGUAGE CA03
Time	45 min
Internal /External Marks	5/30

Objectives: The objective of this course is to familiarize students with complete programming concepts using C language.

Unit No	Topics	Objectives
I	<p>Programming Process:</p> <p>Fundamentals of C Languages:</p>	<p>In the First topic Programming process, we discuss the topics related with the fundamental of computer programming like In second topic Computer memory, we discuss representation of information, the various types of Memory unit, Various input/output devices of computer Steps in developing of a program, Data Flow Diagram, Decision Table, Algorithm development, Flowchart, Pseudo Code, Testing and Debugging.</p> <p>In this section we discuss the various topics like History of C, Character Set, Identifiers and Keywords, Constants, Types of C Constants, Rules for Constructing Integer, Real and character Constants, Variables, Data Types, rules for constructing variables</p>
II	<p>Decision Control Structure:</p> <p>Loop Control Structure:</p> <p>Case Control Structure:</p> <p>Functions:</p>	<p>In this section we discuss the various Decision making with IF-statement, IF-Else and Nested IF Else, The else if Clause with various suitable examples.</p> <p>While and do-while, for loop and Nested for loop,</p> <p>Decision using switch, go to statement</p> <p>Different types of functions, their respective advantages, storage classes</p>

III	<p>Arrays</p> <p>Pointers:</p> <p>Dynamic Memory Allocation:</p>	<ol style="list-style-type: none"> 1. Define, describe, and explain the array data structure. 2. Use arrays to store, sort, and search lists and tables of values. 3. Declare an array. 4. Initialize an array. 5. Reference (read/write to) individual elements of an array. 6. Describe basic sorting techniques. 7. Implement basic sorting techniques. 8. Declare multiple subscript arrays. 9. Describe and implement basic search techniques. 10. Manipulate multiple subscript arrays. 11. Pass arrays as parameters to functions. <p>Student will understand how they can access memory using concept of pointers and how memory is allocated dynamically at run time.</p>
IV	<p>String Manipulation in C:</p> <p>Structures and Unions:</p> <p>Files in C:</p>	<p>Declaring and Initializing string variables, Reading and writing strings, String Handling functions (strlen(), strcpy(), strcmp(), strcat()).</p> <p>The students will understand how to solve real-time type problems using structure and union.</p> <p>The students will be able to understand different file streams and to store their data in files and comparative advantages of files.</p>
References Books and Various web resources		
1.	Teaching Methodology	Participative Teaching, collaborative teaching, Group discussion, Blackboard, presentations, teaching with examples.
2.	Books	Let Us C:Yashwant Kanitkar Programming in C: Balaguruswami Programming in C:
3.	Web Recourses	Spoken Tutorials, slide share

Class	Bachelor of Arts (Computer Application second Semester) Paper B
Subject Code and Name	Operating System Concepts
Time	45 min
Internal /External Marks	10/65

Objective: The course enables the students to get familiar with major functions of O.S. and also covers a case study of O.S. using LINUX

Unit No	Topics	Content
I	<ul style="list-style-type: none"> • Operating System • Memory Management 	This section starts with Basic of Operating system, Types of Operating system, their services and function. In continues second section we start with Memory management: Logical vs Physical address space, Swapping, Paging, and Segmentation, Virtual Memory-Demand paging, Page replacement algorithms
II	<ul style="list-style-type: none"> • Process Management 	This entire section deals with Processor Management: Process Scheduling and definition of Context switch and threads. CPU Scheduling: Basic concepts, scheduling criteria, and Scheduling algorithm, Deadlocks-methods for handling deadlocks, deadlock detection and recovery.
III	<ul style="list-style-type: none"> • File system • Device management 	This section is divided into two sections first one File system where we start with File System structure, Allocation methods, contiguous allocation, linked allocation, indexed allocation; Free Space management- Bit vector, linked list, grouping; Directory implementation-linear list, hash table. In second section we start with Disk structure, disk scheduling, FCFS, SSTF, SCAN, C-SCAN and LOOK scheduling algorithms Control of various devices. Device drivers, Interrupt driven and poll driven data transfers
IV	<ul style="list-style-type: none"> • Linux operating system 	In this section we deal with the one of

		the open source operating system is Linux we start this section with Introduction to Linux, Linux commands: File and directory management, process management; communication management; managing accounts, backup and restore, shell and kernel, security mechanism.
References Books and Various web resources		
1	Books	Linux Unleashed Third Edition, Techmedia. Operating System McGraw Hill.
2	Web Recourses	www.nptel.ac.in www.edx.org coursera.org

Class	Bachelor of Arts (Computer Application) third sem. Paper A
Subject Code and Name	Programming in C++
Time	45 min
Internal /External Marks	5/30

Objectives: By the end of the course students will be able to write C++ programs using the more esoteric language features, utilize OO techniques to design C++ programs, use the standard C++ library, exploit advanced C++ techniques

Unit No	Topics	Content
I	<ul style="list-style-type: none"> • Concept of OOPs • Structure of C++ 	<p>Here in this section we start with</p> <ul style="list-style-type: none"> • what is programming language • various types of programming language. • What is object oriented programming language • various feature of Object oriented language, <p>In next part we start with structure and general rules of C++ program and also start with Classes and object what are classes and objects how we declare in c++ with the help of their access specifies and various other topic like</p> <ul style="list-style-type: none"> • Data Members, • Member Functions, Private and Public members, • data hiding and encapsulation, • Arrays within a class.
II	<ul style="list-style-type: none"> • Class Function Definition 	<p>Here entire section belongs to Basic of Classes and Object, here we learn Member Function definition inside the class declaration and outside the class declaration, Scope resolution operator, Private and Public member function, Nesting of Member functions. Creating Objects, accessing class data members, Accessing member functions, Arrays of Objects, Objects as function arguments: Pass by value, Pass by Reference, Pointers to Objects.</p>
III	<ul style="list-style-type: none"> • Constructor • Inheritance 	<p>Here in this section we learn two topics Contractor and Inheritance. First of all we start with Constructor and their types and then we start with Inheritance - Extending Classes Concept of inheritance, Base class, Derived class, Defining derived classes, Visibility modes: Private, Public, Protected; Single inheritance: Privately derived, Publicly derived;</p>

		Making a protected member inheritable, Access Control to private and protected members
IV	<ul style="list-style-type: none"> File Processing 	In continue we discuss the Concept the file processing under this topic we start with how to open and Close files and various operation perform on file and also learn what are Random file processing
References Books and Various web resources		
1	Books	The C++ Programming Language, Addison-Wesley Publishing Object Oriented Programming Using C++, Khanna Book Programming using C++: New age publication
2	Web Recourses	https://www3.ntu.edu.sg/home/ehchua/programming/cpp/cp3_OOP.html https://github.com/MadhavBahlMD/OOPS https://books.google.co.in/books/.../Object_Oriented_Programming_And_C++.html

Class	Bachelor of Arts (Computer Application) Third semester Paper B
Subject Code and Name	Web based application
Time	45 min
Internal /External Marks	10/65

Objectives: This course enables students to create web pages using scripting language (HTML Javascript) & the Java prog. language.

Unit No	Topics	Content
I	<ul style="list-style-type: none"> • Basic Concepts • HTML 	In First section, Web Server; Web Client/Browser, Understanding how a Browser communicates with a Web Server, Website, Webpage, Static Website, Dynamic Website, Internet, Intranet, Extranet, WWW, URL In second section we start with Introduction to HTML, building blocks of HTML, lists, links, images, tables, frames, layers forms, Introduction to cascading style sheets (CSS) defining and applying CSS.
II	<ul style="list-style-type: none"> • Links • Frames • DHTML • Forms 	This section divided into two section first one is: Anchor tag, External Document References, Internal Document References and Image Maps: Introduction to Frames: The <FRAMESET> tag, The <FRAME> tag, Targeting Named Frames In second section, Introduction to cascading style sheets (CSS), Style tag, Link tag, Types of CSS: In-Line, Internal, External Forms: Attributes of Form element, Input element, The Text Element, Password, Button, Submit Button, Reset Button, The Checkbox, Radio, TextArea, Select and Optio
III	<ul style="list-style-type: none"> • Java Script 	This section divided into two section first one is Java script under this section we start with Features, tokens, data types, variables, operations, control constructs, strings arrays, functions, core language objects, client side objects, event handling. Applications related to client side form validation.
IV	<ul style="list-style-type: none"> • Dreamweaver 	Understanding Workspace Layout, Managing Websites, Creating a Website, Using Dreamweaver Templates,

		<p>Adding New WebPages, Text and Page Format, Inserting Tables, Lists, Images, Adding Links.</p> <p>Web Hosting: Understanding Domain Name & Web Space, Getting a Domain Name & Web Space (Purchase or Free), Uploading the Website to Remote Server, Introduction to Open Source Third party FTP Tools</p>
References Books and Various web resources		
1	Books	<p>An Introduction to Web Programming, PHI</p> <p>Java Script Unleashed, Techmedia</p> <p>Introduction to dreamweaver</p>
2	Web Recourses	<p>https://introcs.cs.princeton.edu/10elements</p>

Class	Bachelor of Arts(Computer Applications) (fourth semester) Paper A
Subject Code and Name	Data structures Using C
Time	45 min
Internal /External Marks	05/30

Objective: This course enables students to do algorithms related to handling data like stack, link list, queue, tress, and graphs. The implementation of these algorithms will be discussed using C programming language.

Unit No	Topics	Content
I	<ul style="list-style-type: none"> Basic Concepts and Notations Array 	<p>In this section, we discuss the various types of data structure and its operations like traversing, insertion, deletion, updating, searching, and sorting etc.</p> <p>In this section, we describe what is array, its types and its memory representation, and its applications.</p>
II	<ul style="list-style-type: none"> Link List 	<p>In this section we consider another data structure called linked lists that addresses the some limitations of arrays. Also, we discuss the various types of link list like header link list, doubly link list, circular link list etc.</p>
III	<ul style="list-style-type: none"> Trees 	<p>So far, we studied about linear data structure like arrays, link list, stacks. These structures are easy to understand, and implement, present data in linear manner.</p> <p>But Tree is non-linear data structure where data elements are not connected only to one predecessor and one successor but can be connected to more elements.</p>
IV	<ul style="list-style-type: none"> Searching& Sorting 	<p>In this section we discuss the various searching techniques performed on unsorted array as well as sorted array. We also discuss about various sorting techniques bubble sort, heap sort, quick sort ,radix sort etc.</p>
References Books and Various web resources		
1	Books	Data Structure- Schaum Series
2	Web Recourses	https://introcs.cs.princeton.edu/10elements https://www.coursera.org/learn/ https://beginnersbook.com/

Class	BA 4th Sem (Computer Application)
Subject Code and Name	Object Oriented Concepts using JAVA- Paper B
Time	45 min
Internal /External Marks	05/30

Entry Behaviour: The students are aware of basic programming techniques such as looping, control structure. They can make procedural programs using C language.

Outcome: The objective of the course is to familiarize students with Object Oriented concepts including inheritance, visibility control etc. using JAVA programming language

Unit No	Topics	Content
I	<ul style="list-style-type: none"> Fundamental of Java 	Objective: In this section basic concept of Java are taught explaining them the difference between procedural and object oriented language. Object Oriented features such as encapsulation, classes, objects, polymorphism are discussed in details. and various components of java like JVM, Byte code, variable, constant, operator, expression, control structure and also start with what are classes and object how we declare class and object how access class member inside and outside the class, explain constructor and method overloading with example ,
II	<ul style="list-style-type: none"> Inheritance Arrays Visibility Control 	Objective of this section is to teach the students the significance of re using the code with inheritance. concept of inheritance, base class and derived class, are explained along with various types of Inheritance. Dynamic method dispatch using abstract class and final keyword. Arrays, String Object, Math Object are taught along with various properties and methods of pre defined objects.
III	<ul style="list-style-type: none"> Packages of Interfaces Exception Handling Multi-threading Programming 	The objective of this section is to teach the packages and grouping of classes. This section is divided into three parts We also explain the concept of Package and Interfaces like import package, define interface, variable of interface, class path etc. There is another topics called exception handling topic like exception types ,Try and catch statement multiple and Nested try catch

		statement, Multi-threading and I/O applets, in multithreading we describe the concept of thread model, priorities, synchronization, messages, how to run thread, create multiple thread.
IV	<ul style="list-style-type: none"> • I/O Applets • Error and Exception handling 	In this section we discuss two topics Applets and Error handling, In first section we start with Applet and Graphical programming In second section Exceptions and try catch block finally statement, Built-in exceptions.
References Books and Various web resources		
1	Books	An Introduction to Java Programming, PHI Programming with Java, A Primer Java Script Unleashed, Techmedia
2	Web Recourses	https://www.coursera.org/learn/java-programming https://beginnersbook.com/2017/09/java-examples

Class	Bachelor of Arts (Computer Application) fifth sem. Paper A+B
Subject Code and Name	Programming with VB.net and Oracle

Time	45 min
Internal /External Marks	5/30+5/30

Entry Behaviour:-

1-The learners are familiar with programming concepts like decision making statements, looping etc.

2- The learners know about Arrays, functions

Learning Outcomes

1- The learners will be able to know about how to design real world applications.

2- The learners will understand the concept of database, information storage in terms of tables, defining various keys etc.

3- The learners will be able to understand how to connect database at the back

4- end with front end.

Topics	Teaching Points	Specific Objectives	Methods, Approaches and Techniques	Resources & Links
a) Visual Studio.Net IDE	Introduction to various parts of IDE like solution explorer, Toolbox, Project explorer, Menus etc. Modules, Classes, Functions etc.	The students will get familiar with various designing tools and will be able to design simple forms with the help of textboxes, checkboxes, radio buttons, combo boxes,	Power point Presentation, Practice on Computer	Reference Books VB.NET How to program, by Dietel Pearson Internet Text books
b) Programming Constructs	<ul style="list-style-type: none"> • Operators • Decision Statements • Looping Statements 	The students will enable to make simple programs	PPT and Practicals	Reference Books VB.NET How to program, by Dietel Pearson Internet Text books
c) Procedures	<ul style="list-style-type: none"> • Classes • Modules • Sub-Procedures • Functions 	The student will be able to understand how to divide a large program in various modules and how to call functions	PPT and Practicals. PPT and Practical. Various programs will be given to them like recursion, factorial etc.	Reference Books VB.NET How to program, by Dietel Pearson Internet Text books
a) Database introduction	<ul style="list-style-type: none"> • Tables • Keys • Database Models • Normalization • RDBMS 	The students will be able to learn about various data types in oracle and will be able to create tables after applying normalization in SQL, enforce various integrity and referential keys, working of SELECT Statement	PPT and Practicals	<ol style="list-style-type: none"> 1) Introduction to Database Management system by Anshuman Sharma, Lakhanpal Publishers 2) Introduction to database system by C.J.Date
b) Querying Multiple Tables	<ul style="list-style-type: none"> • Join • Functions 	The students will be able to join the result of two tables and will practice various SET operators like Union, Intersect, Minus. The student will also learn about various functions like DATE functions, CHARACTER functions etc.	PPT and Practicals	<ol style="list-style-type: none"> 1) Introduction to Database Management system by Anshuman Sharma, Lakhanpal Publishers 2) Introduction to database system by C.J.Date

Class	BA -6th sem Computer Application
Subject Code and Name	Paper A- Computer Networks
Time	45 min
Internal /External Marks	05/30

Objective: This course enables students to provide good understanding of the concepts of network security, wireless and various emerging network technologies.

Unit No	Topics	Objectives
I	<ul style="list-style-type: none"> • Computer Network • Physical Layer 	In this section students will be able to learn network hardware and software, network topologies, uses of computer networks etc. In this section student will learn about the transmission media, switching techniques etc.
II	<ul style="list-style-type: none"> • Data Link Layer • Medium Access Sub Layer 	In this section, we discuss about seven layer of OSI model and their functioning.
III	<ul style="list-style-type: none"> • Network Layer 	In this section we will discuss the functioning of network layer. How data is transferred on the network?
IV	<ul style="list-style-type: none"> • Application Layer 	In this section, we discuss about the

		application layer. Its working various services provided by it.
References Books and Various web resources		
1	Books	Data Communication & computer networks: By Ferozen Data communication and computer Network: Tanenbaum Computer Networks: Kalyani Publisher
2	Web Recourses	Slide share,
3.	Teaching Methods and techniques	Presentations, Group discussion , Online classes(screen Sharing), Google classroom

Class	Bachelor of Arts(6th Semester)
Subject Code and Name	Operating system concepts Paper-B
Time	45 min
Internal /External Marks	10/65

Objective: The objective of the course is to familiarize students with basic concepts related to operating system and its major duties like memory management, process management, resources management etc. Work comfortably in the LINUX environment, edit and manage files and user level security for UNIX development- use standard LINUX development tools for C or C++.

Unit No	Topics	Content
I	<ul style="list-style-type: none"> • Basic of operating system • Introduction to Linux: 	In this first section we discuss the basic of Operating system, what are operating system, various types of operating system and what are various services and need of operating system. Linux is introduced along with Kernel, Linux's shell, Features of Linux, History, Minimum system requirements, Boot and Root disks , Starting and stopping Linux system, passwords, logging in and out, terminal Handling commands: who, Understanding wildcards,

		Environment variables, Understanding I/O Redirection and Piping: Introduction, cut, paste, sort, tee; Introduction to Regular Expressions and grep. Various process management commands are discussed such as Types of processes, managing processes with ps, bg, fg, nice, kill
II	<ul style="list-style-type: none"> Using file system: 	Introduction to common types of files, Filenames, Introduction to different types of directories: Parent, Subdirectory, Home directory; rules to name a directory, understanding Important directories in Linux File System, Absolute and relative filenames, creating and using files and directories(mkdir, cd cat), listing files (ls, ls-l), pwd, moving and copying files and directories (mv, cp), Removing files and directories(rm, rmdir), using wildcards with files and directories, File and directory permissions using relative and absolute methods, Changing group ownership, umask settings
III	<ul style="list-style-type: none"> Vi editor Introduction to shell programming: 	starting vi, vi modes, inserting text, quitting vi, deleting text, copying and moving text, searching and replacing text Defining Variables, Unsetting Variables, Environment Variables, Substitution, Filename Substitution (Globbing), Variable Substitution, Command and Arithmetic Substitution, Quoting , Quoting with Backslashes, Using Single Quotes, Using Double Quotes, Quoting Rules and Situations, The if Statement, The case Statement, The while Loop, The for and select Loops, Loop Control
IV	<ul style="list-style-type: none"> Understanding System Administration activities: 	Superuser (su) command, Taking backups using tar, Managing disk space with df and du, Mounting and Un-mounting file system with mount and unmount, Managing users Suggested Reading :
References Books and Various web resources		
1.	Teaching Methodology	Participative Teaching, collaborative teaching, Group discussion, Blackboard, presentations, teaching with examples.
2.	Books	Essential : 1. Abraham Silverschatz & Peter B Galvin : OS Concepts, Addison Wesley Further Reading : 2. Donovan . John J. : System

		Programming, McGraw-Hill 3. Singhal, : Advanced Concepts in Operating System, McGraw Hill
3.	Web Recourses	slide share