Course Title: Computer Fundamentals and Applications (4 Cr.)
Course Code: CACS101
Year/Semester: I/I
Class Load: 8 Hrs. / Week (Theory: 4 Hrs., Practical: 4 Hrs.)

Course Description
This course offers fundamental concepts of computer and computing which includes introduction to computer system, computer software & database management system, operating system, data communication & computer network and contemporary technologies. It also aims at helping students convert theoretical concept into practical skill through the use of different application packages including word processor, spreadsheet package, presentation package and photo editing graphical package.

Course Objectives
The general objectives of this course are to provide fundamental concepts of information and communication technology and to make students capable of using different application packages in their personal as well as professional life.

Course Contents

Unit 1 Introduction to Computer System 16 Hrs.

Unit 2 Computer Software 3 Hrs.
Introduction to Software, Types of Software, Program vs. Software, Computer Virus and Antivirus.

Unit 3 Operating System 4 Hrs.

Unit 4 Database Management System 8 Hrs.
Introduction to DBMS, Database Models, SQL, Database Design and Data Security, Data Warehouse, Data Mining, Database Administrator

Unit 5 Data Communication and Computer Network 10 Hrs.
Unit 6 Internet and WWW

Internet: Introduction to Internet and its Applications, Connecting to the Internet, Client/Server Technology, Internet as a Client/Server Technology, Email, Video-Conferencing, Internet Service Providers, Domain Name Server, Internet Address, Internet Protocols (IP, TCP, HTTP, FTP, SMTP, POP, Telnet, Gopher, WAIS), Introduction to Intranet, Internet vs. Intranet vs. Extranet, Advantages & Disadvantages of Intranet


Unit 7 Contemporary Technologies


Laboratory Works

Laboratory works should cover all the units and topics mentioned below and a project work should be carried out by students individually implementing the concept and skill learnt in this course.

Unit 1 Operating System


b. CUI Based OS (5 Hrs.): Introduction to DOS, DOS Internal Commands, DOS External Commands.

Unit 2 Word Processor


**Unit 3 Spreadsheet Package**
12 Hrs.
Introduction to Spreadsheet Package, Features of Spreadsheet Package, Introduction to Microsoft Excel, Elements of Excel Window, Cell Referencing in Excel: Relative, Absolute, and Mixed; Managing Workbooks, Worksheets, Windows, Working with Worksheet, Printing Worksheet, Using Formulas/functions; Formatting/Conditional Formatting Data & worksheet; Using Paste Special, Essential Worksheet Functions, Using Templates, Protecting the File and Worksheet with Passwords; Working with Graphic Objects: Clip Art, Word Art, Map; Working with Charts, Working with Internal Database, Getting More Power from Worksheet Databases, Accessing External Databases, Loan Amortization Scheduling and Calculation; Data Validation, Consolidating and Outlining, Using What-if Analysis: Data Table, Goal Seek, Scenario Manager; Understanding Pivot Tables, Constructing and Analyzing Pivot Tables, Using Custom Controls on Worksheets, Effectively Using the Macro Recorder

**Unit 4 Presentation Package**
6 Hrs.
Introduction, Creating and Saving Presentation; Entering, Editing, and Enhancing Text; Editing in different views- Outline View, Slide Sorter View; Creating Graphs, Editing and Enhancing Graphs; Adding ClipArt in Slide, Editing Arts, Animating Charts and Art Objects, Adding Sound, Choosing Sound Effects-Transitional, From Other Sources; Adding Sounds to Animations and Sound Objects; Recording Sound and Narration; Adding Movie in Slides, Playing and Editing Movie; Making Movie Poster and Icon; Slide Show, Setting Slide Transition, Speed and Slide Advancement; Rehearsing Slide Display Timing, Slide Notes and Comments; Editing Text Color, Creating Custom Color; Background and Schemes; Linking and Embedding Objects; Importing and Exporting Presentation; Printing Slides and Handouts

**Unit 5 Photo Editing Package**
20 Hrs.
Fundamentals
**Graphics Basics:** Bitmap Vs. Vector-Based Graphics, Color/Bit Depth and Image Resolution, Graphic File Formats, Optimizing Web Graphics, Regular Text Vs.

Introduction to Color: Color Modes- RGB, CMYK, Grayscale, LAB, Bitmap; Hue, Saturation, and Brightness; Browser Safe Colors; Shadows, Highlights and Midtones of an Image.

Interface, Tools and Options


Transforms: Using Free transform, Move, Rotate, Scale, Skew, Distort, Perspective, Flip-vertical, horizontal, Invert, Rotate 180°, Rotate 90° CW, Rotate 90° CCW.

Layers, Channels and Actions


Photoshop Channels: About Channels, The Channel Palette, Creating and Viewing Channels, Modifying Channels, Deleting Channels, Alpha Channels and Masks.


Restoring and Enhancing Images

Restoration of Photos: Restoring Damaged Photos, Photo Retouching.
Photo Enhancement and Color Correction: Changing Levels, Changing Curves, Color Balance, Changing Brightness and Contrast, Changing Hue Saturation and Brightness, Changing a Grayscale Image to a Colored Image, Histogram, Gradient Map, Desaturate, Invert, Color Replace, Selective Color, Equalize, Threshold, Channel Mixer, Posterize, Changing Background using Layer Compositing

Text Editing and Special Effects
Text Editing in Photoshop: About the Type Layer, Creating Vertical and Horizontal Types, Point and Paragraph Text Creation, Using Horizontal and Vertical Type Mask Tools, Using Character Palette for Text Editing, Choosing a Font, Changing the Type Color, Choosing a Type Size, Specifying Kerning and Tracking, Using Fractional Character Widths, Specifying Baseline Shift, Applying Underline and Strikethrough, Text Alignment and Justification, Specifying Anti-Aliasing, Creating Text Warp, Rasterizing Type, Converting Type to Shapes, Adding Effects to Text

Photoshop Special Effects and Filters: About Special Effects, Using Filters, Basic Filter Examples, Artistic Filters, Distorting Filters, Filter Combinations, Plug-in Filters.

Web Application and Animation

Photoshop for Building Web Interface: About the Interface

Teaching Methods
The teaching faculties are expected to create environment where students can update and upgrade themselves with the current scenario of computing and information technology with the help of topics listed in the syllabus. The general teaching pedagogy that can be followed by teaching faculties for this course includes class lectures, group discussions, case studies, guest lectures, research work, project work, assignments (theoretical and practical), and written and verbal examinations.

Evaluation

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Text Books

Reference Books