Darrang College (Autonomous), Tezpur-784001

Syllabus for FYUGP BCA (SEC Papers)

Computer Fundamentals and Application Software (BCA-SEC-01013)

1. Learning Outcomes: At the end of the course, students will be able to:

   (a) Understand about the different hardware and software components of the computer and their functions.
   (b) Use different Application Software for day-to-day activities.

2. Prerequisites: NIL

3. Semester: 1

4. Course type: Compulsory

5. Theory credit: 2

6. Practical credit: 1

7. Number of required hours:

   (a) Theory: 30 hours (30 classes)
   (b) Practical: 30 hours (15 classes)

Detailed Syllabus (Theory)

UNIT 1: Introduction to Computers and Number Systems   (10 Lectures)

Number system, decimal, binary, octal and hexadecimal number system, conversion among number systems, definition of computer, basic components of computer, bus, evolution of computers, Generations of computers, classification of computers, data representation in a computer, ASCII, Unicode.

UNIT 2: Memory and Storage Devices   (7 Lectures)

Memory, memory hierarchy, registers, general purpose and special purpose registers, primary and secondary memory, volatile and non-volatile memory, semiconductor memory, SRAM and DRAM, Read Only Memory, magnetic storage devices, optical storage devices, solid state drive, flash memory.

UNIT 3: Input and Output Devices   (5 Lectures)

Input device, keyboard, keyboard layouts, pointing devices, mechanical and optical mouse, scanner, hand-held and flat-bed scanners, OMR, OCR, MICR, digital camera, touch pad, trackball, joystick, digitizer, digital microphone. Monitor, LCD, LED, plasma monitor, printers, impact printers, non-impact printers, dot matrix printers, inkjet printers, laser printers, thermal printers, plotters, voice output systems, projector,

Unit 4: Languages and Software   (8 Lectures)

Software; Types of software. System Software and different types. Operating System, Device driver. Application Software; Free and Open-Source Software. Comparative study between Open-Source Software and Proprietary Software. Language Translator. Difference between Compiler and Interpreter.

Practical Components:

   A. Introduction to Libre Office Writer   (12 Practical Hours)
   B. Introduction to Libre Office Calc   (12 Practical Hours)
   C. Introduction to Libre Office Impress   (06 Practical Hours)

Web Designing (BCA-SEC-02013)

1. Learning Outcome: At the end of the course, students will be able to:
   (a) Understand the basic concept of designing web applications.
   (b) Design basic well-structured web page using HTML and CSS
   (c) Develop the ability to implement interactive elements and dynamic content using basic JavaScript.

2. Prerequisites: NIL

3. Semester: 2

4. Course type: Compulsory

5. Theory Credit: 2

6. Practical Credit: 1

7. Number of required hours:

   Theory: 30 Hours (30 classes)

   Practical: 30 Hours (15 classes)

Detailed Syllabus (Theory)

Unit 1: Overview of the World Wide Web and the internet   (4 Lectures)

A brief history of TCP/IP and the Internet, Internet services-email, telnet, ftp, Internet components, the birth of web, web page, home page, web site, Web browsers. Introduction to web servers and their architecture.

Unit 2: HTML   (8 Lectures)

Basics of HTML, HTML tags and attributes, creating list in HTML, hyperlinks, multimedia, HTML forms, tables in HTML, frames in HTML, image maps, style sheets in HTML. DHTML, XML. Creating simple web pages using MS Word or other word processor. Conversion of document formats. Cascading Style sheets.

Unit 3: JavaScript   (10 Lectures)

Basics of JavaScript. Creating interactive web pages using JavaScript.

Unit 4: Basics of php   (8 Lectures)

Database connectivity through php. Creating web pages using php; storing, retrieving data to/from database

MOBILE APPLICATION DEVELOPMENT (BCA-SEC-03013)

1. Learning Outcomes: At the end of the course, students will be able to learn the basics of Mobile Application development

2. Prerequisites: NIL

3. Semester: 3

4. Course type: Compulsory

5. Theory credit: 2

6. Practical credit: 1

7. Number of required hours:

   (a) Theory: 30 hours (30 classes)

   (b) Practical: 30 hours (30 classes)

Unit 1: Overview   **6 hours**

A little background about mobile technologies, Introduction to mobile devices and Administration, Mobile devices vs. desktop devices, Power Management, Screen resolution, Touch interfaces, Application deployment, App Store, Google Play, Windows Store, Development environments. Different mobile technologies – Android, Windows, IOS, Black Berry, series 40, Bada, Benefits and drawbacks of Smartphone programming, Overview of Android, How it all got started, Why Android different and important, Android Stack overview, Linux kernel, native libraries, App framework, Apps, SDK overview, platforms, tools, versions. Creating and setting up custom Android emulator.

UNIT 2: Get Started with Android   **6 hours**

Install the android SDK, Install base tools, install SDKs and Add-ons, Install apache Ant, Emulator and Device. Get know Eclipse, Build, install and Run the Application in your Emulator or Device, Project Structure, Creating Applications and Activities: Introducing the Application Manifest, Using the Manifest Editor, The Android Application Life Cycle, Application Priority and Process States. Creating an Activity: The Activity Life Cycle, Designing User interface, Designing by declaration, creating the opening screen, using

alternate resources, implementing an about box, applying a theme, adding a menu, adding settings, debugging with log messages, debugging with debugger, The Android Widget Toolbox, Layouts, Creating and Modifying Views, Creating and Using Menus, Android Menu System

UNIT 3:   **6 hours**

Intents, Broadcast Receivers, Adapters, and Connecting to an Internet Resource, Using Activities as Dialogs Exploring 2D graphics and Multimedia Learning the basics, adding Graphics to existing apps, handling input, learn to change the final improvements, Playing audio, Playing Video, Adding sound to existing app, Storing local Data, Reading/writing local data, Accessing the Internal File system, Accessing SD card.

UNIT 4:   **6 hours**

Location and Sensing: SMS Messaging, Displaying MAPS Location Data, Monitoring and Tracking a Location, Putting SQL to work: Introducing SQLite, In and Out of SQLite, Hello Database, Data Binding, using content provider, implementing content provider, Preparing and Publishing: Preparing app for publishing, Deploying APK files, uploading in Market.

UNIT 5: Accessing Android Hardware   **6 hours**

Using the Media APIs, Playing Media Resources, Recording Multimedia, Using the Camera, Controlling Camera Settings, Using the Camera Preview, taking a Picture, Introducing the Sensor, Android Telephony, Making Phone Calls, Monitoring Phone State and Phone Activity, Monitoring Data Connectivity and Activity, Accessing Phone Properties and Status, Controlling the Phone, Controlling Device Vibration, Web Apps and Android compatibility: Using Web view, Introducing HTML5

List of Suggested Practical: (at least 15)

1. Create "Hello World" application. That will display "Hello World" in the middle of the screen in the red color with white background.

2. To understand Activity, Intent

i. Create sample application with login module (Check username and password)

ii. On successful login, go to next screen. And on failing login, alert user using Toast.

iii. Also pass username to next screen.

3. Create login application where you will have to validate EmailID (UserName). Till the username and password is not validated, login button should remain disabled.

4. Create and Login application as above. On successful login, open browser with any URL.

5. Create an application that will pass some number to the next screen, and on the next screen that number of items should be display in the list.

6. Understand resource folders:

i. Create spinner with strings taken from resource folder.

ii. On changing spinner value, change image.

7. Understand Menu option.

i. Create an application that will change color of the screen, based on selected options from the menu.

8. Create an application that will display toast (Message) on specific interval of time.

9. Create a background application that will open activity on specific time.

10. Create an application that will have spinner with list of animation names. On selecting animation name, that animation should effect on the images displayed below.

11. Understanding of UI:

i. Create an UI such that, one screen has list of all the types of cars.

ii. On selecting of any car name, next screen should show Car details like: name, launched date, company name, images (using gallery) if available, show different colors in which it is available.

12. Understanding content providers and permissions:

i. Read phonebook contacts using content providers and display in list.

13. Read messages from the mobile and display it on the screen.

14. Create an application to call specific entered number by user in the Edit Text

15. Create an application that will create database with table of User credential.

16. Create an application to read file from asset folder and copy it in memory card.

17. Create an application that will play a media file from the memory card.

18. Create an application to make Insert, update, Delete and retrieve operation on the database.

19. Create an application to read file from the sd card and display that file content to the screen.

20. Create an application to draw line on the screen as user drag his finger.

21. Create an application to send message between two emulators.

22. Create an application to take picture using native application.

23. Create an application to pick up any image from the native application gallery and display it on the screen.

24. Create an application to open any URL inside the application and clicking on any link from that URL should not open Native browser but that URL should open the same screen.