**Name of the Teacher: Dr Vinesh Kumar**

**Year: 2021-2022**

**Open Source Softwares (BACS09A)**

**Skill-Enhancement Elective Course - (SEC-3A)**

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| **Week** | **Topics** |
| 1. | Introduction: History of Open Source Software (OSS), commercial software vs OSS, free software vs freeware, open source software examples - the GNU projects, copy right issues about open source software. |
| 2. | The Linux Operating System: Linux installation and hardware configuration – boot process- The Linux loader (LILO) – The Grand Unified Boot loader (GRUB), user accounts, accessing, starting and shutting processes, log in and log out. |
| 3. | The Linux Operating System (contd.): Command line, simple commands, Unix file system, Unix files, i-nodes and structure and file system related commands. |
| 4. | Unit 3: Basic principles of copyright law, open Source licensing, issues with copyright and patents, warranties. |
| 5. | MIT license, BSD License, Apache license. |
| 6. | Academic Free License, Mozilla Public License. |
| 7. | GPL, LGPL. |
| 8. | Unit 4: Study of commercial application software vs OSS, Open Office. |
| 9. | GAMBAS: GUI environment: GAMBUS IDE, compiling, debugging and running the programs, explain new project window, property window, project explorer window |
| 10. | GAMBAS (contd.): Working with controls like textbox, frames, check box, option button, images, designing the user interface, coding for controls; data types, constants, declaring variables, scope of variables, formatting data. |
| 11. | GAMBAS (contd.): Conditional and loop statements: If and nested if statements, comparing strings, select case statement, using statement, displaying message in message box, user input validation |
| 12. | GIMP: Installation, GIMP user interface, creating new windows, |
| 13.-14. | GIMP (contd.): Freehand drawing in GIMP, drawing regular shapes, image editing- cropping and resizing, masking |
| 15. | GIMP (contd.): Language support |

**Computer Networks (CSGE301)**

**Generic Elective - (GE)**

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| **Week** | **Topics** |
| 1-2 | Introduction to computer network, data communication, components of data communication, Data transmission mode, data communication measurement, LAN, MAN, WAN, wireless LAN, internet, intranet, extranet |
| 3 | Network Models: Client/ server network and Peer-to-peer network |
| 4-5 | OSI Model, TCP/IP, layers and functionalities. |
| 6-7 | Transmission Media: Guided Media: Twisted pair, Coaxial cable, Optical fiber, Unguided media: Microwave, Radio frequency propagation, Satellite |
| 8 | LAN Topologies: Ring, bus, star, mesh and tree topologies. |
| 9 | Network Devices: NIC, repeaters, hub, bridge, switch, gateway and router. |
| 10 | Internet Terms: Web page, Home page, website, internet browsers, URL, Hypertext, ISP, Web server, download and upload, online and offline |
| 11 | Introduction to Web Design: Introduction to hypertext markup language (html) Document type definition, creating web pages, lists, |
| 12 | Hyperlinks, tables, web forms |
| 13 | Inserting images, Frames, hosting options and domain name registration |
| 14 | Customized Features: Cascading style sheet (css) for text formatting and other manipulations. |
| 15 | Cascading style sheet (css) and other manipulations |

**Information Security and Cyber Laws (CSGE401)**

**Generic Elective - (GE)**

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| **Week** | **Topics** |
| 1-2 | Definitions : Protection , Security, risk, threat, vulnerability, exploit, attack, confidentiality, integrity, availability, non-repudiation, authentication, authorization, codes, plain text, encryption, decryption, cipher text, key, ciphers, Symmetric and asymmetric cryptography |
| 3 | Public key, private key,Crypt analysis, Cyber forensics. Substitution cipher (Caeser), Transposition cipher (Rail-Fence) |
| 4 | Risk analysis, process, key principles of conventional computer security, security policies |
| 5-6 | Data protection, access control, internal vs external threat, security assurance, Passwords, access control, computer forensics and incident response |
| 7-8 | Cyber attacks, types and examples) |
| 9 | Brief Introduction of handling the attacks described in UNIT 3. |
| 10 | Firewalls, logging and intrusion detection systems, e-mail security |
| 11 | Security issues in operating systems, ethics of hacking and cracking. |
| 12-14 | Digital Signature and Electronic Signature, Digital Certificate, Penalty and compensation, Punishment for various attacks |
| 15 | Brief introduction of IT security infrastructure in India. National  agencies handling IT security. |

**Web Designing using HTML 5 (BACS08B)**

**Skill-Enhancement Elective Course - (SEC-2B)**

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| **Week** | **Topics** |
| 1 | Introduction to HTML: What is HTML, HTML documents, basic structure of an HTML document. Creating an HTML document, mark up tags, heading-paragraphs, line breaks, and HTML tags. |
| 2 | Elements of HTML5: Introduction to elements of HTML5, working with text, working with lists, tables. |
| 3 | Elements of HTML5 (contd.): Creating frames, working with hyperlinks, images and multimedia. |
| 4 | Elements of HTML5 (contd.): Working with forms and controls. |
| 5 | Introduction to Cascading Style Sheets: concept of CSS, creating style sheet, CSS properties. |
| 6 | Introduction to Cascading Style Sheets (contd.): CSS Styling (background, text Format, controlling fonts), working with block elements and objects. |
| 7 | Introduction to Cascading Style Sheets (contd.): Working with lists and tables, CSS id and class, box model (introduction, border properties, padding properties, margin properties), |
| 8 | CSS Advanced: Grouping, dimension, display, positioning, floating, align, pseudo class, navigation bar, image sprites, attribute sector. |
| 9 | CSS Advanced (contd.): CSS Color, creating page layout and site designs. |
| 10 -11 | Introduction To Web Publishing Or Hosting: Creating the web Site, saving the web site, working on the web site. Creating web site structure, creating titles for web pages, themes-publishing web sites. |
| 12-15 | JavaScript Fundamentals: Data types and variables. Functions, methods and events, controlling program flow, JavaScript object model, built-in objects and operators. |

**Programming using Python (CSGE101)**

**Generic Elective - (GE)**

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| **Week** | **Topics** |
| 1-2 | Computer Fundamentals and Problem Solving: Basic Computer Organization: CPU, memory, I/O Units, Problem solving using computer, notion of an algorithm |
| 3 | Python interpreter/shell, indentation; identifiers and keywords; Creating Python Programs:Input and output statements, defining functions, literals, numbers, and strings; |
| 4 | Operators: arithmetic operators, relational operators, boolean operators, assignment operators, ternary operator and bitwise operator and expressions |
| 5 | Control statements (conditional statements, loop control statements, |
| 6 | Break, continue and pass, exit function, default arguments |
| 7 | Errors and exceptions |
| 8 | Strings and Lists: String class, built-in functions for string, string traversal, string operators and operations; |
| 9 | Lists creation, traversal, slicing and splitting operations, passing list to a function |
| 10 | Object Oriented Programming: Introduction to Classes, Objects and Methods, |
| 11 | Standard Libraries, File handling through libraries |
| 12-13 | Built-in data structures: Tuples, sets, dictionary, stacks, and queues |
| 14-15 | searching and sorting |