

SEMESTER II

| CODE | COURSE TITLE |
|----------------------|----------------------------|
| 18CSUC203/ 18CAUC203 | LINUX AND PERL PROGRAMMING |

| Category | CIA | ESE | L | T | P | Credit |
|----------|-----|-----|----|---|---|--------|
| Core | 25 | 75 | 55 | 5 | - | 4 |

Preamble

This course will prepare students to learn about the Linux Operating System - structure, concepts and commands. Student will be able to write simple shell programming using Linux utilities, pipes and filters. Student will learn fundamentals of Perl programming and write Perl scripts using array, hash data structures, file and regular expressions.

Course Outcomes

On the successful completion of the course, students will be able to

| CO Number | CO Statement | Knowledge Level |
|-----------|--|-----------------|
| CO1 | Explain the structure of Linux Operating System | K2 |
| CO2 | Develop Linux utilities to perform File processing, Directory handling, User Management and display system configuration | K3 |
| CO3 | Develop shell scripts using pipes, redirection, filters and Pipes | K2 |
| CO4 | Understand the concepts of process, backup and compression | K3 |
| CO5 | Develop Perl scripts using array, hash data structures and Regular expressions | K3 |

Mapping with Programme Outcomes

| COs | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|-----|-----|-----|-----|-----|
| CO1 | S | S | M | M | S |
| CO2 | S | M | S | S | S |
| CO3 | S | M | M | S | S |
| CO4 | S | S | S | S | M |
| CO5 | S | L | M | M | M |

S-Strong; M-Medium; L-Low

Syllabus

UNIT I

10 Hrs.

Introduction to LINUX Operating System: Introduction - The LINUX Operating System.
Managing Files and Directories: Introduction – Directory Commands in LINUX – File Commands in LINUX.

UNIT II**10 Hrs.**

Creating files using the vi editor: Text editors – The vi editor. **Managing Documents:** Locating files in LINUX – Standard files – Redirection – Filters – Pipes. **Securing files in LINUX:** File access permissions – viewing File access permissions – Changing File access permissions.

UNIT III**15 Hrs.**

Automating Tasks using Shell Scripts: Introduction – Variables- Local and Global Shell variables – Command Substitution. **Using Conditional Execution in Shell Scripts:** Conditional Execution – Construct. **Managing repetitive tasks using Shell Scripts:** Using Iteration in Shell Scripts – The while construct – The until construct – The for construct – The break and continue commands – Parameter handling in shell scripts - Simple Programs using Shell Scripts.

UNIT IV**15 Hrs.**

Controlling Process Execution : Requesting for background processing – Checking a background process – the top command – Terminating a background process – Finding the time taken to complete a command **Backing up, Restoring & Compressing Files :** Need for making backups – Selecting a Backup medium – Mounting and Unmounting a file system – Compressing Files.

UNIT V**10 Hrs.**

Introduction to PERL: Introduction – Program Structure – Perl variables – Loops and Conditionals – Iteration – Files in Perl – Perl Subroutines – die-exit on error-Pattern matching and extraction.

Text Books

| Sl. No. | Author Name | Title of the Book | Publisher | Year and Edition |
|---------|--------------------|---|--|-------------------------------|
| 1. | NIIT | Operating System LINUX | Prentice-Hall of India Private Limited | 2009, Eastern Economy Edition |
| 2. | N.B. Venkateswarlu | Introduction to Linux: Installation and Programming | BS Publications | 2008, 1 st Edition |

Reference Book

| Sl. No. | Author Name | Title of the Book | Publisher | Year and Edition |
|---------|------------------|-------------------------------|--|-------------------------------|
| 1. | Richard Petersen | Linux: The Complete Reference | Tata McGraw-Hill Publishing Company Limited, New Delhi | 2008, 6 th Edition |

Web Resources

1. <http://spoken-tutorial.org/>
2. <https://www.tutorialspoint.com/perl/index.htm>

Pedagogy

Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

SEMESTER II

| CODE | COURSE TITLE |
|---------------------|--------------------------------|
| 18CSUCP02/18CAUCP02 | LINUX AND PERL PROGRAMMING LAB |

| Category | CIA | ESE | L | T | P | Credit |
|----------------|-----|-----|---|---|----|--------|
| Core Practical | 40 | 60 | - | - | 45 | 1 |

Preamble

The student will be able to create programs in the Linux environment using Linux utilities and commands. Student is given an introduction of Perl Programming and they will be able to write Perl scripts.

Course Outcomes

| CO Number | CO Statement | Knowledge Level |
|-----------|--|-----------------|
| CO1 | Develop Linux utilities to perform File processing, Directory handling and User Management | K3 |
| CO2 | Develop shell scripts using pipes, redirection, filters and Pipes | K3 |
| CO3 | Develop shell scripts to display system configuration | K3 |
| CO4 | Develop simple Perl scripts | K3 |
| CO5 | Develop simple Perl scripts applicable to Bioinformatics | K3 |

Mapping with Programme Outcomes

| COs | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|-----|-----|-----|-----|-----|
| CO1 | S | S | M | M | S |
| CO2 | S | S | S | S | S |
| CO3 | S | S | S | S | S |
| CO4 | S | M | M | M | M |
| CO5 | S | M | M | M | M |

S- Strong; M-Medium; L-Low

Syllabus

1. Write a shell script to simulate the file commands :rm, cp, cat, mv, cmp, wc, split, diff.
2. Write a shell script to show the following system configuration :
 - a) currently logged user and his log name
 - b) current shell , home directory , Operating System type , current Path setting , current working directory
 - c) show currently logged number of users, show all available shells
 - d) show CPU information like processor type , speed
 - e) show memory information
3. Write a shell script to display calendar for a specified month or a range.
4. Write a Shell Script to implement the following: pipes, Redirection and tee commands.
5. Write a shell script to implement the filter commands.
6. Write a shell script to find the frequency of nucleotides in a given sequence.
7. Write a shell script to find the greatest among the given set of numbers using command line arguments.
8. Write a Perl script to find for a motif in protein sequences stored in a file.
9. Write a Perl script to use Array and Hash data structure.
10. Write a Perl script to read a file and count the number of lines containing or not containing certain words.

Pedagogy

Lecture, PPT, Quiz

SEMESTER III

| | |
|--------------------------|---|
| CODE 18CSUC306 | COURSE TITLE INTERNET OF THINGS |
|--------------------------|---|

| | | | | | | |
|-----------------|------------|------------|----------|----------|----------|---------------|
| Category | CIA | ESE | L | T | P | Credit |
| Core | 25 | 75 | 70 | 5 | - | 5 |

Preamble

To enable the students to learn about the fundamentals, building blocks, applications of IoT, security and vulnerabilities of internet of things

Course Outcomes

| CO Number | CO Statement | Knowledge Level |
|-----------|---|-----------------|
| CO1. | To understand the physical, logical design of IoT and to identify various IoT levels | K1 |
| CO2. | To describe conceptual framework, architectural views and technology behind IoT | K2 |
| CO3. | To understand the Physical Servers and different types of applications in various domains | K1 |
| CO4. | To demonstrate the design methodology and building blocks of IoT devices | K2 |
| CO5. | To understand IoT privacy, security, vulnerabilities solutions and business models | K1 |

On the successful completion of the course, students will be able

Mapping with Programme Outcome

| COs | PO1 | PO2 | PO3 | PO4 | PO5 |
|------|-----|-----|-----|-----|-----|
| CO1. | S | - | L | S | S |
| CO2. | M | - | L | S | S |
| CO3. | M | - | L | S | S |
| CO4. | M | - | L | S | S |
| CO5. | L | - | L | S | S |

S- Strong; M-Medium; L-Low

Syllabus

UNIT I

15 Hrs.

Introduction to Internet of Things: Introduction – Physical Design of IoT - Logical Design of IoT - IoT Enabling Technologies – IoT levels & Deployment Templates

UNIT II**15 Hrs.**

IOT: Conceptual framework – Architectural view – Technology behind IOT – Sources of IOT – M2M Communication – Examples of IOT

UNIT III**15 Hrs.**

Domain Specific IoTs: Introduction – Home Automation – Cities – Environments –Retail – Logistics - Agriculture –Industry – Health & Lifestyle - **IoT Physical Servers and Cloud Offerings:** Introduction to cloud storage models & communication APIs – WAMP – AutoBahn for IoT – Xively Cloud for IoT

UNIT IV**15 Hrs.**

IoT Platforms Design Methodology: Introduction – IoT Design Methodology – Case Study on IoT System for Weather Monitoring - **IoT Physical Devices & Endpoints:** Building blocks of an IoT Device – Exemplary Device: Raspberry Pi – About the Board – Raspberry Pi Interfaces - Other IoT Devices

UNIT V**15 Hrs.**

IoT Privacy, Security and Vulnerabilities Solutions: Introduction – Vulnerabilities, Security Requirements and Threat Analysis – Use Cases and Misuse Cases - IoT Security Tomography and Layered Attacker Model –**Business Models and Processes Using IoT:** Introduction – Business Models and Business Model Innovation

Text Books

| Sl. No. | Author Name | Title of the Book | Publisher | Year and Edition |
|---------|-----------------------|---|---|-------------------|
| 1. | ArshdeepBahga, Vijay | Internet of Things: A Hands-On Approach | Universities Press (India) Private Limited | 2018, Reprint |
| 2. | Madiseti Raj Kamal | Internet of Things: Architecture and Design Principles (Unit II & V) | McGraw - Hill Education (India) Private Limited Chennai | 2017, 1st Edition |

Reference Book

| Sl. No. | Author Name | Title of the Book | Publisher | Year and Edition |
|---------|---|--------------------|-------------------------------------|-------------------|
| 1. | Srinivasa K.G, Siddesh G.M, Hanumantha Raju R | Internet of Things | Cengage Learning India Pvt. Limited | 2017, 1st Edition |

Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

SEMESTER III

| CODE | COURSE TITLE |
|-------------------------|---|
| 18CSUA303/ 18CAUA303 | BUSINESS ACCOUNTING (40% Theory & 60% Problems only) |

| Category | CIA | ESE | L | T | P | Credit |
|----------|-----|-----|----|---|----|--------|
| Allied | 25 | 75 | 55 | 5 | 15 | 5 |

Preamble

The objective of the course is to impart accounting skills in Final Accounting and Cost Accounting. The students will be trained on the preparation of final accounts and cost sheet using an accounting package.

Course Outcomes

On the successful completion of the course, students will be able to

| CO Number | CO Statement | Knowledge Level |
|-----------|---|-----------------|
| CO1 | Identify and Apply the appropriate accounting rules for the preparation of Journal and method of posting the same into Ledger | K1 - K3 |
| CO2 | Select, Classify, Choose and Categorize the given entries to enter in appropriate subsidiary books | K1 - K4 |
| CO3 | Classify, Apply and Build various financial statements like Trial Balance, Trading, P&L account and Balance Sheet | K2 - K4 |
| CO4 | Define, Explain and Apply appropriate depreciation method to prepare Machinery Account | K1 - K3 |
| CO5 | Classify the elements of cost and Construct the Cost Sheet accordingly | K2 - K3 |
| CO6 | Apply the knowledge and skill of preparation of various accounting concepts using an accounting package | K2 - K3 |

Mapping with Programme Outcomes

| COs | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|-----|-----|-----|-----|-----|
| CO1 | - | - | S | M | M |
| CO2 | - | - | S | M | M |
| CO3 | - | - | S | M | M |
| CO4 | - | - | S | M | M |
| CO5 | - | - | S | M | M |
| CO6 | S | S | S | M | S |

S- Strong; M-Medium; L-Low

Syllabus

UNIT I

15 Hrs.

Accounting: Definition – Objectives – Branches of Accounting – Accounting Concepts – Conventions – Systems of Accounting – Rules for Double-Entry System of Book Keeping – Preparation of Journal and Ledger Accounting. **Hands on training.**

UNIT II

15 Hrs.

Subsidiary Books: Purchase Book – Sales Book – Purchase Return Book – Sales Return Book – Cash Book (Two Columnar only) - Petty Cash Book. **Hands on training.**

UNIT III

15 Hrs.

Preparation of Trial Balance – **Final Accounts:** Trading, Profit and Loss Account and Balance Sheet with Simple Adjustments. **Hands on training.**

UNIT IV

15 Hrs.

Accounting Package: Features – Home Screen – Accounts Info Menu – Display Menu. Company Creation – Alteration & Deletion of Company – Selection of Company – Ledger Creation – Preparation of Trial Balance & Final accounts.

UNIT V

15 Hrs.

Depreciation: Definition - Causes of depreciation – Basic factors - Methods of Depreciation – Straight Line Method and Diminishing Balance Method (Simple Problems). **Cost Accounting:** Elements of Costing – Types of Costing – Preparation of Simple Cost Sheets.

Text Books

| Sl. No. | Author Name | Title of the Book | Publisher | Year and Edition |
|---------|--------------------------|---|----------------------|----------------------------|
| 1. | Murthy.A, & Reddy .T.S. | Advanced Accountancy | Margham Publications | Second edition, 2012 |
| 2. | Jain S. P & Narang, K.L, | Cost Accounting Principles and Practice | Kalyani Publishers | Twenty Third edition, 2012 |

Reference Books

| Sl. No. | Author Name | Title of the Book | Publisher | Year and Edition |
|---------|--|---------------------------|-------------------------------|-------------------------------|
| 1. | Grewal, T.S. | Double Entry Book Keeping | Sultan Chand & Sons Publisher | 2004 |
| 2. | VinayakamM.N., Mani P.L., Nagarajan K.L, | Principles of Accountancy | Sultan Chand & Sons Publisher | 3 rd Edition, 2008 |

Pedagogy

Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

SEMESTER IV

| CODE | COURSE TITLE |
|-----------|--------------------|
| 18CTUC408 | C#.NET PROGRAMMING |

| Category | CIA | ESE | L | T | P | Credits |
|----------|-----|-----|----|---|---|---------|
| Core | 25 | 75 | 71 | 4 | - | 4 |

Preamble

This course provides the students with an overview of .NET framework, Programming structure of C# in developing applications. This course covers the technologies like Common Language Runtime, C# and ADO.NET data access.

Course Outcomes

On the successful completion of the course, students will be able to

| CO Number | CO Statement | Knowledge Level |
|-----------|---|-----------------|
| CO1 | Define the basic concepts of .NET framework. | K1 |
| CO2 | Understand the general programming structure of C# in developing software solutions based on user requirements. | K2 |
| CO3 | Apply console based applications. | K3 |
| CO4 | Examine the background process with the help of windows application. | K3 |
| CO5 | Illustrate the concepts of database access. | K3 |

Mapping with Programme Outcomes

| COs | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|-----|-----|-----|-----|-----|
| CO1 | S | S | M | S | M |
| CO2 | S | S | M | S | M |
| CO3 | S | S | M | S | M |
| CO4 | S | M | M | S | M |
| CO5 | S | S | S | S | M |

S- Strong; M-Medium; L-Low

Syllabus

UNIT I

15 Hrs.

UNDERSTANDING .NET: The C# Environment: -.Net Strategy- Origins of .Net technology- .NET frame work- common language runtime- framework base classes- user and program interfaces- visual studio .NET- .NET languages- benefits of .NET Approach - C# and .NET. - First C# program - Data types and Expressions.

UNIT II

15 Hrs.

Methods and behaviors- Making Decisions - Repeating Instructions - Arrays and Collections: array basics-array declaration- array class- string class.

UNIT III

15 Hrs.

ADVANCED OBJECT ORIENTED PROGRAMMING: Inheritance- abstract classes- partial classes- interfaces- polymorphism. Debugging and Handling Exceptions: Errors- Exceptions- Exception handling Techniques- Exception Classes

UNIT IV

15 Hrs.

INTRODUCTION TO WINDOWS PROGRAMMING: Constrating windows and console applications- Graphical User Interface- Elements of good design - Using C# and visual studio to create windows based applications- windows forms - controls. Programming based on Events: Event handling in C# - Listbox control objects- Combobox control objects- Menustrip control objects- checkbox and Radiobutton objects.

UNIT V

15 Hrs

DATABASE ACCESS USING ADO.NET: Database Access- ADO.Net- Data source configuration Tools.

Text Books

| Sl.No. | Author Name | Title of the Book | Publisher | Year and Edition |
|--------|----------------|-------------------|------------------|---|
| 1. | E.Balagurusamy | Programming in C# | Tata McGraw Hill | 2 nd Edition,2008 [1- Unit] |
| 2. | Barbara Doyle | C# Programming | Cengage Learning | 5 th Edition,2015 [2 - 5 Units] |

Reference Books

| Sl.No. | Author Name | Title of the Book | Publisher | Year and Edition |
|--------|---------------------------|----------------------------------|--------------------------------------|------------------|
| 1. | John Sharph Jon Jagger | Microsoft Visual C# .Net | Prentice-Hall of India | 2005 |
| 2. | Herbert Schildt | The Complete Reference C# 4.0 | Tata McGraw Hill | 2010 |
| 3. | Kick Start | Microsoft Visual C# .NET 2003 | Pearson Education Private Limited | 2004 |

Web Resources

1. <https://www.tutorialspoint.com/csharp/>
2. <https://www.tutorialsteacher.com/csharp/c>
3. <https://www.guru99.com/c-sharp-tutorial.html>

Pedagogy

Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

SEMESTER IV

| CODE | COURSE TITLE |
|-----------|------------------------|
| 18CTUCP04 | C#.NET PROGRAMMING LAB |

| Category | CIA | ESE | L | T | P | Credits |
|----------|-----|-----|---|---|----|---------|
| Core | 40 | 60 | - | 5 | 70 | 3 |

Preamble

This course covers the programming concepts of C# and also developing window based applications. The goal is to practice the aspects of multi-tier application development using .NET framework.

Course Outcomes

On the successful completion of the course, students will be able to

| CO Number | CO Statement | Knowledge Level |
|-----------|---|-----------------|
| CO1 | Identify the basic terminology used in computer programming. | K2 |
| CO2 | Understand the execution of the C# program using arrays, control structures and exceptions. | K3 |
| CO3 | Use C# to implement object oriented concepts in developing solutions. | K3 |
| CO4 | Apply the GUI tools to develop the windows application. | K3 |
| CO5 | Demonstrate the use of various controls and connectivity in windows application. | K3 |

Mapping with Programme Outcomes

| COs | PO1 | PO2 | PO3 | PO4 | PO5 |
|-----|-----|-----|-----|-----|-----|
| CO1 | S | S | M | S | M |
| CO2 | S | S | M | S | M |
| CO3 | S | S | M | S | M |
| CO4 | S | M | M | S | L |
| CO5 | S | S | S | S | M |

S- Strong; M-Medium; L-Low

Syllabus

1. Program to implement Array List Methods
2. Program to display current time using delegate, event and Inheritance
3. Program to display flod's triangle

4. Program to handle exceptions
5. Program to load an image; format the background color using windows application.
6. Program to demonstrate hash table
7. Program to find factorial and prime number using windows form application
8. Develop a simple calculator.
9. Develop a Student registration form and validate its control
10. Develop a Window Application with menu and dialog boxes
11. Developing an application for Employee details
12. Program to implement key press events

Web Resources

1. <https://www.guru99.com/c-sharp-tutorial.html>
2. <https://www.homeandlearn.co.uk/csharp/csharp.html>

Pedagogy

Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar