M.Sc. COMPUTER SCIENCE
CHOICE BASED CREDIT SYSTEM (CBCS)

Syllabus
(2017 – 2018)

DEPARTMENT OF COMPUTER SCIENCE,
APPLICATIONS & INFORMATION TECHNOLOGY
FACULTY OF ARTS, SCIENCE AND HUMANITIES

KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University)
(Established Under Section 3 of UGC Act, 1956)
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SCOPE
This course relates to the interface between web servers and their clients. The course provides information includes markup languages programming interfaces and languages and standards for document identification and display. The use of Web technology makes to enhance active student learning and improves their creativity in making web pages.

OBJECTIVES

- To Create a new webpage
- To understand the fundamental features of web applications.
- To understand the objects and components needed for a web designing.

UNIT-I

UNIT-II

UNIT-III
ASP.NET: ASP.NET Configuration Scope and State: Configuration – state- application – session object- ASP.NET Objects & Components: Scripting object models- ASP components and controls- ASP.NET and SQL server-Using SQL server using database in ASP.NET applications ActiveX data objects

UNIT-IV

UNIT-V

SUGGESTED READINGS
TEXT BOOKS

REFERENCES

WEB SITES
1. www.w3schools.com/
2. www.2createawebsite.com
3. www.javascriptkit.com
4. www.learn-javascript-tutorial.com
5. www.webteacher.com/javascript
6. www.aspntutorial.info
7. www.aspfree.com
8. www.aspnettutorials.com
SCOPE
This course will introduce cryptography theories, algorithms, and systems. It will also consider necessary approaches and techniques to build protection mechanisms in order to secure computer networks. The course covers fundamental aspects of security in a modern networked environment with the focus on system design aspects and cryptography in the specific context of network/internetwork security.

OBJECTIVES
- Understand theory of fundamental cryptography encryption and decryption algorithms
- To show the ability to encrypt “Plain Text” into “Cipher Text” and vice versa using different encryption algorithms.
- The ability to choose a suitable ciphering algorithm according to the required security level.
- The ability to understand a given ciphering algorithm and to analyze it.
- Learn to program and apply the encryption algorithms.
- Build cryptosystems by applying encryption algorithms.
- Apply the cryptosystems so far learned to building of information and network security mechanisms.
- Techniques for identity authentication, message authentication, and development of identity management.
- Build secure authentication systems by use of message authentication techniques.

UNIT-I

UNIT-II

UNIT-III

UNIT-IV

UNIT-V

SUGGESTED READINGS

TEXT BOOKS

REFERENCES

WEB SITES
1. williamstallings.com/Crypto3e.html
2. u.cs.biu.ac.il/~herzbea/book.html
3. www.flipkart.com/search-books/cryptography+and+network+security+William+stallings+ebook
SCOPE
This course introduces students to the basic concepts and techniques of Data Mining, develop skills of using recent data mining software for solving practical problems, gain experience of doing independent study and research.

OBJECTIVES
- To introduce students to the basic concepts and techniques of Data Mining.
- To develop skills of using recent data mining software for solving practical problems.
- To gain experience of doing independent study and research.
- Possess some knowledge of the concepts and terminology associated with database systems statistics and machine learning.

UNIT-I
Introduction: Fundamentals of data mining - Data Mining Functionalities - Classification of Data Mining systems - Major issues in Data Mining.
Data Warehouse and OLAP Technology: An Overview - Data Warehouse - Multidimensional Data Model - Data Warehouse Architecture - Data Warehouse Implementation - From Data Warehousing to Data Mining.

UNIT-II
Data Preprocessing: Needs Preprocessing the Data - Data Cleaning - Data Integration and Transformation - Data Reduction - Discretization and Concept Hierarchy Generation - Online Data Storage.

UNIT-III
Mining Frequent Patterns Associations and Correlations: Basic Concepts - Efficient and Scalable Frequent item set Mining Methods - Mining various kinds of Association rules – From Association Mining to Correlation Analysis - Constraint-Based Association Mining.

UNIT-IV
Classification and Prediction: Issues Regarding Classification and Prediction - Classification by Decision Tree Induction - Rule-based Classification – Prediction - Accuracy and Error Measures - Evaluating the Accuracy of a classifier or Predictor - Ensemble Methods - increases the Accuracy - Model Selection.
UNIT-V
Cluster Analysis Introduction: Types of Data in Cluster Analysis - A Categorization of Major Clustering Methods - Partitioning Methods - Hierarchical Methods – Density-Based Methods Grid-Based Methods - Model-Based Clustering Methods - Clustering High-Dimensional Data – Constraint-Based Cluster Analysis - Outlier Analysis.

SUGGESTED READINGS

TEXT BOOK

REFERENCES

WEB SITES
1. Thedacs.Com
2. Dwreview.Com
3. Pcai.Com
4. Eruditionhome.Com
SCOPE
The main objective of the course is to portray the recent trends in the field of cloud computing and providing exposures to some open source and commercial clouds.

OBJECTIVES
- Provide a good understanding of the concepts standards and protocols in Cloud computing

UNIT-I

UNIT –II
Infrastructure as a Service (IaaS) - Platform as a Service (PaaS) - Software as a Service (SaaS) - Identity as a Service (IDaaS) - Compliance as a Service (CaaS) - Cloud storage.

UNIT-III

UNIT-IV
Privacy and Compliance Risks - Threats to Infrastructure Data and Access Control - Cloud Access Control Issues - Database Integrity Issues - Cloud Service Provider Risks - Architectural Considerations
General Issues - Trusted Cloud Computing - Identity Management and Access Control

UNIT -V
Case Study on Open Source and Commercial Clouds: Microsoft Azure - Amazon EC2 - Google Web services – Open Nebula.

SUGGESTED READINGS
TEXT BOOKS

REFERENCES

WEB SITES
1. en.wikipedia.org/wiki/Cloud_computing
SCOPE
This course will follow an emerging field of mobile computing applications architecture Mobility support in cellular telephone networks Personal Communications Systems/Personal Communications Networks Wireless local area networks Direct Broadcast Satellite; Low Earth Orbiting Satellites.

OBJECTIVES
• Identify the use of mobile wireless technologies
• Know the types of mobile wireless technologies that are currently being used
• Knows how does mobile wireless technologies access to network resources?

UNIT-I

UNIT-II
Mobile Computing Applications - Key Characteristics of Mobile Applications – Messaging for users – Mobile Portals – Special Applications – Mobile agent applications

UNIT-III

UNIT-IV

UNIT-V
SUGGESTED READINGS

TEXT BOOKS
   (Page Nos: 1.1- 1.52 2.3 – 2.51 3.2 – 3.37 4.3-4.51 6.16-6.36 7.3-7.33 8.4-8.39)
   (Page Nos: 61-198 225-336)

REFERENCES

WEB SITES
4. http://www.compinfo.co.uk/computer_books.htm#tele
SCOPE
This course discusses the distinctions between validation testing and defect testing, describe the principles and need for various types of testing and understand the essential characteristics of tool used for test automation.

OBJECTIVES
- To test how the software reacts under repeated execution of the same operations.
- To build a suite of tests that covers every feature in your application.
- To reuse tests on different versions of an application even if the users interface changes.

UNIT-I
Introduction about testing Definition about software testing-Principles of testing-Phases of software project-Difference between QC and QA-Testing Verification and Validation. Life cycle models for Waterfall Spiral and V model.

UNIT-II
Types of testing-White box testing- Black box testing-Performance testing- Regression testing-Adhoc testing.

UNIT-III
Test planning-Test process-Test reporting-Best practices-Test planning check list-Test plan templates-Test case writing-Techniques for SRS document.

UNIT-IV

UNIT-V
Test metrics – Types of metrics – Project metrics-progress metrics-productivity metrics. What is win runner-Methods of testing in win runner.

SUGGESTED READINGS
TEXT BOOK

REFERENCES

WEB SITES
1. en.wikipedia.org/wiki/Software_testing
2. www.onestoptesting.com/ -
3. www.ece.cmu.edu/~koopman/des_s99/sw_testing/
SCOPES
Soft computing (SC) is a branch in which it is tried to build intelligent and wiser machines. Intelligence provides the power to derive the answer and not simply arrive to the answer. This course increase purity of thinking machine intelligence freedom to work dimensions complexity and fuzziness handling capability.

OBJECTIVES
1. universalize into domains where direct experience is absent;
2. through parallel computer architectures that simulate biological processes they can perform mapping from inputs to the outputs faster than inherently serial analytical representations
3. can build intelligent and wiser machines.

UNIT-I

UNIT-II

UNIT-III
UNIT-IV

UNIT-V

SUGGESTED READINGS

TEXT BOOK

REFERENCES


WEB SITES

1. www.amazon.in/soft+computing
2. www.soft-computing.de/def.html
3. en.wikipedia.org/wiki/Soft_computing
4. endnote.com/downloads/style/applied-soft-computing
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Marks</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>17CSP111</td>
<td>WEB TECHNOLOGY – PRACTICAL</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

**Instruction Hours / week:** L: 0 T: 0 P: 4

**Marks:** Int : 40 Ext : 60

1. Using Javascript change the font color on reloading a webpage.
2. Generate web page that represents clock-every 60 see the page updated with server current time Using JavaScript.
3. Design a form and validate it using JavaScript.
4. Write Database Access program using ASP.NET
5. Program to retrieve Cookies information using ASP.NET
6. Program to count web page hits using ASP.NET
7. Create a menu in XML.
8. Create a demo for XSLT.
9. Display XML information in Tree structure format.
1. Write a MATLAB program to do all basic matrix operations in MATLAB for a multidimensional array.

2. Write a MATLAB code to compares and contrasts some similarity and distance measures for the following.
   (a) Compute the Hamming distance and the Jaccard similarity between the following two binary vectors.
   \[
   x = 0101010001 \\
   y = 0100011000
   \]

3. a. Plot the graph of \( f(x) = \exp(-2x^2 - 3y^2) \). Choose appropriate intervals for \( x \) and \( y \).
    b. Plot the graph of \( f(x) = \cos(x) \sin(y) \). Choose appropriate intervals for \( x \) and \( y \).

4. The number of children for different patients in a database is given with a vector 
   \( c = \{31027634-20010156\} \)
   Find the outliers in the set \( C \) using standard statistical parameters mean and variance.
   a. If the threshold value is changed from \( \pm 3 \) standard deviations to \( \pm 2 \) standard deviations what additional outliers are found?

5. For a given data set \( X \) of three-dimensional samples
   \( X = \{\{120\}\{314\}\{215\}\{016\}\{243\}\{442\}\{521\}\{777\}\{000\}\{333\}\} \)
   a) find the outliers using the distance-based technique if
      i) the threshold distance is 4 and threshold fraction \( p \) for non-neighbor samples is 3.
      ii) the threshold distance is 6 and threshold fraction \( p \) for non-neighbor samples is 2.

6. Given the data set \( X \) with three input features and one output feature representing the classification of samples

\[
\begin{array}{ccccc}
I_1 & I_2 & I_3 & O \\
\hline
2.5 & 1.6 & 5.9 & 0 \\
7.2 & 4.3 & 2.1 & 1 \\
3.4 & 5.8 & 1.6 & 1 \\
5.6 & 3.6 & 6.8 & 0 \\
4.8 & 7.2 & 3.1 & 1 \\
\end{array}
\]
Rank the features using a comparison of means and variances

7. A data set for analysis includes only one attribute X:
   \( X = \{712518591312197121234513876\} \)
   a) What is the mean of the data set X?
   b) What is the median?
   c) What is the mode and what is the modality of the data set X?
   d) Find the standard deviation for X.
   e) Give a graphical summarization of the data set X using a boxplot representation.
   f) Find outliers in the data set X.

8. Given a data set with two dimensions X and Y.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2.75</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2.5</td>
<td></td>
</tr>
</tbody>
</table>

   a) Use a linear-regression method to calculate the parameters \( \alpha \) and \( \beta \) where \( y = \alpha + \beta x \).
   b) Estimate the quality of the model obtained in a) Using the correlation coefficient \( r \).

9. The following is the data set X:

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>7</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>5</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>7</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>9</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>5</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>7</td>
<td>150</td>
<td></td>
</tr>
</tbody>
</table>

Create 2D Presentations:
   a) Show a bar chart for the variable A
   b) Show a histogram for the variable B.
   c) Show a line chart for the variable B
   d) Show a pie chart for the variable A

10. Create a MATLAB function to count the number of lines in a text file.

11. Create a structure array for student mark details and print a plot for the marks of the students.
12. The test scores for the three students are given in the following table:

<table>
<thead>
<tr>
<th></th>
<th>RDBMS</th>
<th>OracleDBA</th>
<th>WebDesigning</th>
<th>AI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smith</td>
<td>66</td>
<td>91</td>
<td>95</td>
<td>83</td>
</tr>
<tr>
<td>Sam</td>
<td>91</td>
<td>88</td>
<td>80</td>
<td>73</td>
</tr>
<tr>
<td>John</td>
<td>80</td>
<td>88</td>
<td>80</td>
<td>78</td>
</tr>
</tbody>
</table>

Find the best student using multifactorial evaluation if the weight factors for the subjects are given as the vector \( W = [0.3, 0.2, 0.1, 0.4] \).
SCOPE
This course enables the student to identify and learns the functions/services of TCP/IP component key protocols in the TCP/IP suite including IP and TCP and TCP/IP applications such as FTP TELNET SMTP etc.

OBJECTIVES
- architectural Overview of the TCP/IP Protocol Suite
- IP Addressing Fundamentals
- IPv4 forwarding and routing.
- learn about host name resolution and the Domain Name System (DNS).
- services and operations of DHCP Servers and Domain Name Servers
- major applications using the key TCP/IP protocols

UNIT-I

UNIT-II

UNIT-III

UNIT-IV
BOOTP - DHCP – Address Discovery and Binding. DNS – Name Space – DNS in Internet – Resolution – Resource Records
UNIT-V

SUGGESTED READINGS

TEXT BOOK

REFERENCES

WEB SITES
1. en.wikipedia.org/wiki/Internet_protocol_suite  
3. www.yale.edu/pclt/COMM/TCPIP.HTM  
4. www.w3schools.com/tcpip/default.asp
SCOPE
This course provides an overview of Information Security and Assurance. Students will be exposed to the spectrum of security activities methods methodologies and procedures with emphasis on practical aspects of Information Security.

OBJECTIVES

• A student who successfully completes this course should at a minimum be able to: State the basic concepts in information security including security policies security models and security mechanisms.

• Explain concepts related to applied cryptography including plain-text cipher-text the four techniques for crypto-analysis symmetric cryptography asymmetric cryptography digital signature message authentication code hash functions and modes of encryption operations.

• Explain common vulnerabilities in computer programs including buffer overflow Vulnerabilities time-of-check to time-of-use flaws incomplete mediation.

UNIT-I

UNIT-II

UNIT-III

UNIT-IV

UNIT-V

SUGGESTED READINGS
TEXT BOOK

REFERENCES
Enterprise Perceptive on Risk and Compliance. O’Reilly.

WEB SITES

1. http://www.csc.ncsu.edu/faculty/ning
2. csrc.nist.gov/publications/nistpubs/800-12/handbook.pdf
3. www2.warwick.ac.uk/fac/sci/dcs/teaching/modules/cs134/
SCOPE

This course is designed to give a firm foundation in basic database administration.

OBJECTIVES

- Install the Database.
- Back up and recover data.
- Administer users and manage data.
- Transport data between databases.
- Configure the network.
- Understand the Oracle database architecture and how its components work and interact with one another.
- Use performance monitoring database security user management and backup/recovery techniques.
- Create an Operational Database

UNIT-I


UNIT-II

UNIT-III

UNIT-IV
User management and database security: managing users - the database resource manager - controlling access to data - auditing database usage - authenticating users - enterprise user security - database security do’s and don’t’s. Backing up databases: backing up oracle databases - the recovery manager - backing up control file - oracle back up tool – user managed backups - database corruption detection - enhanced data protection for disaster recovery. Database recovery: types of database failures - oracle recovery processes - performing recovery with RMAN - media recovery scenarios.

UNIT-V

SUGGESTED READINGS
TEXT BOOK

REFERENCE BOOKS

Web Sites
download-uk.oracle.com
cse.psu.edu
dba-oracle.com
otn.oracle.com
oracle.com
techonthenet.com/oracle
forums.oracle.com
SCOPE

This course introduces basic concepts and principles about software design and software architecture. It starts with discussion on design issues followed by coverage on design patterns. It then gives an overview of architectural structures and styles. Practical approaches and methods for creating and analyzing software architecture are presented. The emphasis is on the interaction between quality attributes and software architecture. Students will also gain experiences with examples in design pattern application and case studies in software architecture.

OBJECTIVES:
A student who successfully completes this course should at the minimum be able to:

- Design and motivate software architecture for large scale software systems
- Recognize major software architectural styles design patterns and frameworks
- Generate architectural alternatives for a problem and select among them
- Use well-understood paradigms for designing new systems
- Identify and assess the quality attributes of a system at the architectural level

UNIT I

UNIT II
Case studies - Key word is Context – Instrumentation Software – Mobile Robotics – Cruise Control – Three Vignettes in Mixed Style

UNIT III

UNIT IV
UNIT V

SUGGESTED READINGS

TEXT BOOKS

REFERENCES

Semester-II

17CSP205A  OBJECT ORIENTED ANALYSIS AND DESIGN WITH UML  4H – 4C
Instruction Hours / week: L: 4 T: 0 P: 0  Marks: Int : 40 Ext : 60  Total: 100

SCOPE
This course introduce students to the concepts and terms used in the object-oriented approach to systems analysis and design highlighting the importance of Object Oriented Analysis and Design concepts and apply them to solve problems and Shows how we apply the process of Object Oriented Analysis and Design documents for a given problem using Unified Modelling Language

OBJECTIVES
- To use object-oriented technologies
- To use Unified Modeling Language 2.2
- To Perform object-oriented analysis and design
- To Construct various UML models (including use case diagrams class diagrams interaction diagrams statechart diagrams activity diagrams and implementation diagrams) using the appropriate notation.

UNIT-I

UNIT-II
Classes and Objects: The nature of the class – Relationship among classes – The Interplay of Classes and Objects – On building quality classes and objects. Classification: The Importance of proper classification – Identifying proper classes and objects – Key abstraction mechanism.

UNIT-III
The notation: Elements of the notation – class diagrams –state transition diagrams – object diagrams.

UNIT-IV

UNIT-V

SUGGESTED READINGS

TEXT BOOK

REFERENCES

WEB SITES
1. uml-tutorials.trireme.com/
SCOPE
The main objective of the course is to portray the recent trends in the field of Grid computing and creation and management of Internet-based utility computing infrastructure.

OBJECTIVES
- Provide a good understanding of the concepts standards and protocols in Grid computing
- To perform analysis design and implementation of ARC grid computing model.

UNIT- I

UNIT- II

UNIT- III

UNIT- IV
UNIT- V

SUGGESTED READINGS

TEXT BOOK

REFERENCES

WEB SITES
1. http://cseweb.ucsd.edu/classes/sp00/cse225/notes/fran/introweb.html
SCOPE
Geographic Information System (GIS) deals with the analysis and management of geographic information. This course offers an introduction to methods of managing and processing geographic information. Emphasis will be placed on the nature of geographic information data models and structures for geographic information geographic data input data manipulation and data storage spatial analytic and modeling techniques and error analysis.

OBJECTIVES
- The basic objectives of this course for students is to understand the basic structures concepts and theories of GIS
- This is an ice-breaking course into GIS and serves as the foundation course for other advanced courses in GIS.
- The understanding of the concepts and theories of GIS will help students to perform spatial analysis in a GIS system properly and efficiently.

Unit I

Unit II

Unit III

Unit IV

"Master of Science Computer Science 2017 Karpagam Academy of Higher Education Coimbatore-641021 India"
Spatial Data Editing – Location Errors – Spatial Data Accuracy Standards – Topological Errors – Topological Editing – Nontopological Editing – Other Editing operations

**Unit V**
Data Exploration – Attribute and Data Query – Spatial Data Query – Raster Data Query – GIS Applications.

**SUGGESTED READINGS**

**Text Book**

**Reference Book**
1. Simple router configuration.
2. Access and utilize the router to set basic parameters.
3. Connect configure and verify operation status of a device interface.
4. Implement static and dynamic addressing services for hosts in a LAN environment.
5. Identify and correct common problems associated with IP addressing and host configurations.
6. Configure verify and troubleshoot RIPv2.
7. Perform and verify routing configuration tasks for a static or default route given.
8. Configure verify and troubleshoot NAT operation on a router.
9. Configure and verify a PPP connection between routers.
Semester-II

17CSP212  ORACLE 10G ADMINISTRATION – PRACTICAL  4H – 2C

Instruction Hours / week: L: 0 T: 0 P: 4   Marks: Int : 40 Ext : 60   Total: 100

1. Demo for globalization support.
2. Create database and do the manipulation.
3. Create users and grant the privileges.
4. Create table space.
5. Create different types of tables.
6. Create index and managing index tables.
7. Demo for flashback database and tables.
8. Export and import the tables.
9. Create back up for tables.
10. Re-sequence the rows using CTAS.
11. Change the initializing parameters.
SCOPE
This course enable to learn Java web programming with J2EE understand object-oriented programming with J2EE and get started fast in J2EE programming.

OBJECTIVES
- Understand J2EE as an architecture and platform for building and deploying web-based n-tier transactional component-based enterprise applications
- Understand the fundamental concepts of XML and related technologies
- Acquire knowledge on how XML is currently being used in various application areas
- Know how to parse and transform XML documents via tools and through programming APIs
- Understand the EJB architecture and have a good grasp on when to use and how to use various EJB bean types and acquire relevant Java programming experience

UNIT-I

UNIT-II

UNIT-III
Java Servlets: Benefits – Anatomy – Reading Data from Client –Reading HTTP Request Headers – Sending Data to client – Working with Cookies.

UNIT-IV

UNIT-V
JSP: What is Java Server Pages? - Evolution of Dynamic Content Technologies – JSP & Java 2 Enterprise ed.); JSP Fundamentals: Writing your first JSP- Tag conversions-
Running JSP. **Programming JSP Scripts**: Scripting Languages – JSP tags- JSP directives – Scripting elements – Flow of Control – comments;
**Java Remote Method Invocation.**

**SUGGESTED READINGS**

**TEXT BOOKS**
   (PAGE NOS. : 2 – 15 46 - 64 65 – 99 )

**REFERENCES**

**WEB SITES**
1. java.sun.com/javaee/
2. java.sun.com/j2ee/1.4/docs/tutorial/doc/
3. www.j2eebrain.com/
SCOPE
This course teaches the student the concepts and principles that underlie modern operating systems and a practice component to relate theoretical principles with operating system implementation. Learn about processes and processor management concurrency and synchronization memory management schemes file system and secondary storage management security and protection etc.

OBJECTIVES
- Understand fundamental operating system abstractions such as processes threads files semaphores IPC abstractions shared memory regions etc.
- Understand how the operating system abstractions can be used in the development of application programs or to build higher level abstractions
- Understand how the operating system abstractions can be implemented
- Understand the principles of concurrency and synchronization and apply them to write correct concurrent programs/software
- Understand basic resource management techniques (scheduling or time management space management) and principles and how they can be implemented. These also include issues of performance and fairness objectives avoiding deadlocks as well as security and protection.

UNIT-I
History and Overview Of GNU/Linux And FOSS 3
Definition of FOSS & GNU History of GNU/Linux and the Free Software Movement Advantages of Free Software and GNU/Linux FOSS usage trends and potential—global and Indian.

UNIT-II
System Administration
GNU/Linux OS installation--detect hardware configure disk partitions & file systems and install a GNU/Linux distribution ; Basic shell commands -logging in listing files editing files copying/moving files viewing file contents changing file modes and permissions process management ; User and group management file ownerships and permissions PAM authentication ; Introduction to common system configuration files & log files ; Configuring networking basics of TCP/IP networking and routing connecting to the Internet (through dialup DSL Ethernet leased line) ; Configuring additional hardware - sound cards displays & display cards network cards modems USB drives CD writers ;
Understanding the OS boot up process; Performing every day tasks using gnu/Linux -- accessing the Internet playing music editing documents and spreadsheets sending and receiving email copy files from disks and over the network playing games writing CDs; X Window system configuration and utilities--configure X windows detect display devices; Installing software from source code as well as using binary packages.

UNIT-III
Server Setup And Configuration
Setting up email servers--using postfix (SMTP services) courier (IMAP & POP3 services) squirrel mail (web mail services); Setting up web servers --using apache (HTTP services) php (server-side scripting) perl (CGI support); Setting up file services --using samba (file and authentication services for windows networks) using NFS (file services for gnu/Linux / Unix networks); Setting up proxy services --using squid (http / ftp / https proxy services); Setting up printer services -using CUPS (print spooler) foomatic (printer database); Setting up a firewall -Using netfilter and iptables.

UNIT-IV
Programming Tools
Using the GNU Compiler Collection --GNU compiler tools; the C preprocessor (cpp) the C compiler (gcc) and the C++ compiler (g++) assembler (gas); Understanding build systems--constructing make files and using make using autoconf and autogen to automatically generate make files tailored for different development environments; Using source code versioning and management tools --using cvs to manage source code revisions patch & diff; Understanding the GNU Libc libraries and linker--linking against object archives (.a libraries) and dynamic shared object libraries (.so libraries) generating statically linked binaries and libraries generating dynamically linked libraries.

Using the GNU debugging tools --gdb to debug programs graphical debuggers like ddd memory debugging / profiling libraries mpatrol and valgrind; Review of common programming practicities and guidelines for GNU/Linux and FOSS; Introduction to Bash sed & awk scripting.

UNIT-V
Application Programming
Basics of the X Windows server architecture; Qt Programming; Gtk+ Programming; Python Programming; Programming GUI applications with localisation support.

SUGGESTED READINGS

TEXT BOOK
REFERENCES


Web Sites:
5. http://www.networktheory.co.uk/docs/gccintro/
SCOPE
The objectives of this course are to make the students learn the fundamental theories and
techniques of digital image processing cover the fundamental concepts of visual
perception and image acquisition basic techniques of image manipulation segmentation
and coding and a preliminary understanding of Computer Vision.

OBJECTIVES

- To perform image manipulations and analysis in many different fields.
- To provide students with the ability to apply knowledge of computing
  mathematics science and engineering to solve problems in multidisciplinary
  research.

UNIT-I
Introduction: Digital image processing – Origins of digital image processing- Examples
of fields that use digital image processing-Fundamental steps in digital image processing-
Components of an image processing system-Representing digital image.

UNIT-II
Some Basic relationships between Pixels-Basic gray level transformations- Histogram
processing - Basic spatial filtering- Smoothing special filtering- Image Degradation/
Restoration process- Noise Models.

UNIT-III
Image Segmentation: Thresholding - Edge Based Segmentation – Region Based
Segmentation – Matching. Image Compression: Error Criterion - Lossy Compression -
Lossless Compression.

UNIT-IV
Shape Representation and Description: Region Identification - Contour Based
Representation And Description – Region Based Shape Representation And Description

UNIT-V
Image Recognition: Introduction – Statistical Pattern Recognition - Neural Net-
Syntactic Pattern Recognition - Graph Matching - Clustering
SUGGESTED READINGS

TEXT BOOK

REFERENCES

WEB SITES
http://www.imageprocessingbasics.com/
http://www.astropix.com/HTML/J_DIGIT/TOC_DIG.HTM
SCOPE
This course gain an understanding of the concepts and techniques used to model and implement communications between processes residing on independent host computers. The course examines the conceptual framework for specifying a computer network - the network architecture and investigates the set of rules and procedures that mediate the exchange of information between two communicating processes - the network protocols.

OBJECTIVES
- Be able to understand and analyze advanced Internet protocols.
- Be able to employ a hierarchy of Java classes to provide a solution to a given set of requirements.
- Can demonstrate an understanding of network architecture both hardware and software.
- Can write software to implement a client-server application using the socket programming API.

UNIT-I

UNIT- II

UNIT- III
Case history of Networking and Management: Challenges of Information Technology Managers – Goals organization and functions – Network and System Management – Network Management System Platform; SNMP Broadband and TMN Management: Network Management Standards & Model – Organization Information and

UNIT- IV

UNIT- V

SUGGESTED READINGS

TEXT BOOK

REFERENCES

WEB SITES
SCOPE
This course focuses on software issues in the design and implementation of modern computer systems particularly the operating systems and distributed algorithms.

OBJECTIVES:
The objectives is to learn the fundamentals of
- Distributed processes (synchronization communication and scheduling)
- Concurrent processes and programming
- Process interaction and Process scheduling
- Distributed file systems and Distributed shared memory
- Security issues in network and distributed environments

UNIT-I

UNIT- II

UNIT- III

UNIT- IV
Naming: Introduction – desirable features of a good naming system – fundamental terminologies and concepts.

UNIT- V

SUGGESTED READINGS
TEXT BOOK

REFERENCES

WEB SITES
SCOPE
Expose students to software and hardware capabilities of wireless applications.

OBJECTIVES
Students will learn:
- the architecture of wireless applications
- the use of wireless markup language
- principles of wireless applications.

UNIT-I
Mobile Data Introduction: The Rise of Mobile Data-Key Services for the Mobile Internet- Overview of the WAP-The origins of the WAP- WAP architecture-WAP Internal Structure-Components of the WAP Standards- WAP Gateways-Network Infrastructure Services Supporting WAP Clients-WAP Architecture Design Principles – Relationship with other standards.

UNIT-II

UNIT-III
Variables –Other Content you can include-Controls-Miscellaneous Markup- Sending Information-Application Security-Other Data; The Meta element- Document Type Declarations- Errors and browsers Limitations-Content generation- WML Version Negotiation.

UNIT-IV
User Interface Design: Making Wireless Applications Easy to Use- Website Design-Computer Terminals Vs Mobile Terminals-Designing a usable WAP site-structured usability method-user interface design guidelines- Design guidelines for selected WML Elements.

UNIT-V

SUGGESTED READINGS

TEXT BOOK


REFERENCES


Web Sites :
www.wap.com
www.w3schools.com/wap/
SCOPE
To obtain knowledge and skills in WAN technologies PPP Frame Relay ATM and VOIP

OBJECTIVES
Upon successful completion of this course the student will be able to:
- Describe common WAN protocols and interfaces.
- Demonstrate basic routing and network troubleshooting.

Unit I

Unit II

Unit III

Unit IV

Unit V

SUGGESTED READINGS

Text Books

Reference Book
1. Create a sign in form in servlets.
2. Write a servlet Program to lock a server.
3. Write a servlet program that returns list of information in table format.
4. Design a counter that counts number of times user has visited the site in current browsing session.
5. Write a program to retrieve cookies information
6. Build a JAVA Bean for opening an applet from JAR file.
7. Write a program to add controls in BEAN.
8. Design a counter in JAVA BEAN.
9. Write a program to stream contents of a file using JSP.
10. Write a program to insert an applet into JSP page.
1. To write a Linux program to display process deadlock state.
2. To write a program to display the allocated memory.
3. To write a program to simulate the DOS Command-Copy.
4. To write a program to implement signal handling.
5. To write a simple Linux program using thread.
6. To write a program to display the date & time using TCP Sockets.
7. To write a program to display the date & time using UDP Sockets.
8. To write a program to display the cpu scheduling
9. To write a Linux program to create a lock file.
10. To write a program to display the user information