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| **Course – 47 Title: Computer Networks Lab** |  |
| **Course No.: CCE 314 Credit : 1.5 Contact Hours: 2** | **Total Marks: 100** |

**11.1 Rationale:**

A computer network engineer need to know the practical knowledge of network architecture and design.

**11.2 Objectives:**

1. Learn basic concepts of computer networking and acquire practical notions of protocols with the emphasis on TCP/IP.
2. To understand the layered architecture and how do some important protocols work.
3. Ability to make a practical network design.

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching Learning Strategy/** | **11.6 Assessment Strategy** |
| To familiarize with the Lab Network Topology. | Study Different Networking tools and pools of IP addresses. | **Lecture**  **Discussion**  **Demonstration** | **Assignment** |
| To learn and observe the usage of different networking commands | Study Different Networking commands | **Lecture**  **Discussion**  **Demonstration** | **Practical exam**  **Assignment** |
| To familiarize with the network packet sniffer, ethereal. Analyzing HTTP request and response messages. | Study the different network packet with information | **Lecture**  **Assignment**  **Case studies**  **Demonstration** | **Practical exam**  **Assignment** |
| Making client/server scenario | Study the client server configuration | **Assignment**  **Demonstration**  **Case studies** | **Practical exam**  **Assignment** |
| To explore the non‐privileged mode of the installed routers. | Study the router configuration | **Assignment**  **Demonstration**  **Case studies**  Group Discussion | **Practical exam**  **Assignment** |
| To compare the working of different routers on the basis of bandwidth, reliability, txload, rxload, queuing strategy, queue drops, input errors and output errors. | Study the router configuration | **Assignment**  **Demonstration**  **Case studies** | **Practical exam**  **Assignment** |
| To observe the working of TCP three‐way‐hand‐shaking procedure. | Study the TCP three way hand shaking | **Assignment**  **Demonstration**  **Case studies** | **Practical exam**  **Assignment** |
| To learn different congestion avoidance techniques. | Study the congestion avoidance techniques | **Assignment**  **Demonstration**  **Case studies** | **Practical exam**  **Assignment** |
| To observe the working of Address Resolution Protocol (ARP). To explore different fields of ARP packets. | Study the ARP and packet | **Assignment**  **Demonstration**  **Case studies** | **Practical exam**  **Assignment** |

**RECOMMENDED BOOKS AND PERIODICALS**

**Text Books**:

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|  | 1. Computer Networks: Andrew S. Tanenbaum  2. Data and Computer Communications: William Stallings  3. Computer Networking a Practical approach |

**11.1 Rationale:**

Computer Engineers should be competent in Mobile Based Application software through Object oriented language. This Android Apps /IOS/Java Programming Knowledge is valuable to both beginners and advanced developers that already have experience in developing applications software.

**11.2 Objectives:**

Students mainly understand a practical concept about the hands-on Software Development project. They will learn how to create Mobile Based applications software using/OOP/Java Programming/IOS/Laravel Framework etc.

Use the development tools in the Android development environment

 Use the major components of Android API set to develop their own apps

 Describe the life cycles of Activities, Applications and Fragments

 Use the Java programming language to build Android apps

 Make UI-rich apps using all the major UI components

 Know UI best-practices

 Be familiar with new UI components like Fragments and the Action Bar

 Store and manipulate data using Content Provi ders, Shared Preferences and Notifications

 Do background processing with Services and AsyncTasks

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching Strategy/ Learning Experience** | **11.6 Assessment Strategy** |
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| To Apply Mobile Apps | **Android Overview**  Introduction to Android framework, Development environment ,Android SDK overview | Group Assignment, Panel Discussion, Problem based Learning | Matching Type, Peer-Rating |
| To Apply Mobile Apps | **Advanced Java Overview**  Object Oriented Concept, Java Basics: Data Types, Conditions, Loops, Arrays,  A Classes and Objects, Inheritances, Polymorphism,  Abstract class, Interface, Package  Access Modifiers, Exception Handling, Basic GUI, Serialization  Multi-threading, I/O,Collection | Problem Based Learning, Project, Inquiry –based Learning | Practical Exam, Matching Type |
| To Apply Mobile Apps User Interface | **Android User Interface** Layouts, Widgets: Button, Text View  Event listeners, Sliding Drawer Scroll View, Tab Widget, Screen size and screen orientation, Option Menu, Check Box, Date Picker/Time Picker  Image Button, Progress Bar, Radio Group/Radio Button, Dialog Alert List  Radio  Toast, Custom Toast, Toggle Button  Spinner, Auto complete Text View, Rating Bar, Web View | Problem-based Learning, Demonstration, Project  /Assignment | Group Exercise, Observation, Inventories |
| To Apply Mobile Apps | **Android Basics** Activity Life Cycle, Services, Broadcast Receivers, Content Providers  Fragments | Problem-based Learning, Demonstration, Project  /Assignment | Group Exercise, Observation, Inventories |
| To Apply Mobile Apps Database Connection | **Android Advanced** Notification , Fragment, Phone Calls  Mapping, GPS, Location Based, Services etc. Wi-Fi,  **SQL Database** SQLite and MySQL, MCQ TEST.  **Networking**  Network Services, REST,JSON/XML | Problem-based Learning, Demonstration, Project  /Assignment | Group Exercise, Observation, Inventories |
| To Apply UML | **UML** Class Diagram, Object Diagram  Modeling types, Introduction UML Tools & Utilities,Real Project | Problem-based Learning, Demonstration, Project  /Assignment | Group Exercise, Observation, Inventories |
| To Apply IOS | INTRODUCTION  What You Will Learn iOS Platform Overview, Using The iOS Dev Center, Getting Started, Getting The SDK, Hello iOS, Understanding The Skeleton AppiPhone iPad And Universal Apps. Provisioning Your Device Tools Overview Xcode Overview, Using Interface Builder, Using The Simulator  Using The Organizer, Key Xcode Tips  Objective-C Essentials, Objective-C\_ Overview, Creating Classes, Declaring And Implementing Methods  Sending Messages, Memory Management, Creating Object Instances ,Automatic Reference Counting ,Declared Properties, Coding Conventions, Using The Foundation Framework, Working With Strings, Extending With Categories, Using The Xcode Debugger, Working With Numbers, Collections - Part 1: Arrays  Collections - Part 2 Dictionaries | Problem Based Learning, Project, Inquiry –based Learning | Practical Exam, Matching Type |
| To Apply IOS | View Controller, Understanding MVC View Controller Overview, Understanding View Loading, Presenting Modal View ,Controllers  Views, Understanding Views, Creating Views Programmatically, Building The Main User Interface, Defining IBOutlets, Working With Images And Image Views, Handling Images On Retina Devices | Problem Based Learning, Project, Inquiry –based Learning | Practical Exam, Matching Type |
| To Apply IOS | Data Management, Building The Data Model, Archiving Data, Understanding Protocols, Adopting NSCoding, Persisting The Data Model, Table Views, Using iOS Table Views, Introducing A Navigation Controller  Building The Music List View Controller, Providing The Table Data, Enabling Behavior With Delegation, Adding Swipe To Delete | Problem Based Learning, Project, Inquiry –based Learning | Practical Exam, Matching Type |
| Project | Project, Review & Exam | Problem-based Learning, Demonstration, Project  /Assignment | Group Exercise, Observation, Inventories |

**RECOMMENDED BOOKS AND PERIODICALS**

**Text Books**:

1. W3school.com
2. On line Tutorial