COURSE TITLE : **PROJECT WORK AND SEMINAR**
COURSE CODE : **6009a**
COURSE CATEGORY : **A**
PERIODS/WEEK : **6**
PERIODS/SEMESTER : **90**
CREDITS : **10**

TIME SCHEDULE

MODULE	TOPIC	PERIODS
I		
II		
III		
IV		
TOTAL		

1. To develop design of a multi storeyed building.
2. To implement structural planning. And site planning
3. To enhance team spirit and creative talents for achieving a goal.

Selection of Project:
1. Select programme related project which has relevance to today's industry, preferably with a social relevance.
2. Suggested type of Projects :
      a. Providing technical service to industry
      b. Entrepreneurship development
3. Project should be feasible at Diploma level and economically viable
4. Only projects which can be developed by the Diploma students need be selected. Support of external agencies not permitted

Guidelines for Project Work:
1. Suitable batches may be formed with 3 – 5 students per batch
2. The programme of the project work should be monitored at least once a week and progress may be documented
3. Involvement of each student should be ensured

Format for the preparation of Project work :
1. Cover Page as per format
2. Acknowledgement
3. Certificate of the Project Guide
4. Synopsys of the Project
5. Main Report
      - Objective & Scope of the Project
      - Theoretical Background
      - Definition of Problem
      - Methodology adopted, System Implementation & Details
      -Hardware/Software/Machinery/Equipment/used

COURSE TITLE	:	COMPUTER NETWORKS
COURSE CODE	:	6131
COURSE CATEGORY	:	A
PERIODS/WEEK	:	4
PERIODS/SEMESTER	:	60
CREDITS	:	5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Review of Network Models	15
2	Network Layer	15
3	Transport Layer	15
4	Application Layer	15

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	To Understand the concept of TCP/IP Protocol
2	1	To Understand the concept of Network Layer
3	1	To Understand the concept of Transport Layer
4	1	To Understand the concept of Application Layer

Specific Outcomes:

MODULE I. REVIEW OF NETWORK MODELS

1.1 Understand TCP/IP Protocol

       1.1.1 Illustrate computer networks

       1.1.2 Identify TCP/IP Protocol suite.

       1.1.3 Explain the functionalities of layers in TCP/IP

       1.1.4 Define Addressing of TCP/IP.

       1.1.5 Describe about Wired LAN – Ethernet

       1.1.6 State IEEE 802 project

       1.1.7 Illustrate standard Ethernet

       1.1.8 Describe about Wireless LAN.

       1.1.9 State IEEE 802.11

       1.1.10 Explain LAN connecting devices.

       1.1.11 Explain the architecture of Virtual LANs.

MODULE II NETWORK LAYER

2.1 Understand Network Layer

       2.1.1 Explain Network layer services

       2.1.2 Illustrate network layer performance

       2.1.3 Describe IPV4 addresses

2.1.4 Define DHCP
2.1.5 Explain Internet Protocol
2.1.6 State security of IPV4 datagram
2.1.7 Describe routing algorithms
2.1.8 Differentiate between unicasting, multicasting, and broadcasting

MODULE III TRANSPORT LAYER
3.1 Understand Transport Layer
3.1.1 Explain Transport layer services
3.1.2 Explain Transport layer protocols
3.1.3 Explain User Datagram Protocol (UDP).
3.1.4 Explain Transmission Control Protocol (TCP).
3.1.5 Describe Stream Control Transmission Protocol (SCTP).

MODULE IV APPLICATION LAYER
4.1 Understand Application Layer
4.1.1 Explain various services of application layer
4.1.2 Illustrate World Wide Web
4.1.3 Describe HTTP
4.1.4 Explain File Transfer Protocol.
4.1.5 Explain Electronic Mail
4.1.6 Explain TELNET.
4.1.7 Describe Domain Name System.
4.1.8 Define Dynamic DNS

CONTENT DETAILS

MODULE I – TCP/IP PROTOCOL
Introduction to computer networks – physical structure, topology, types - TCP/IP – architecture, Description of layers, addressing – wired LAN – Ethernet protocol – IEEE project 802 – Standard Ethernet – characteristics, addressing, implementation – wireless LAN – architectural comparison, characteristics, access control – IEEE 802.11 – architecture – LAN connecting devices – hub, switch, router – virtual LAN – architecture, membership, configuration

MODULE II – NETWORK LAYER
Network layer services – Packetizing, routing and forwarding, other services – Performance – delay, throughput, packet loss, congestion control – IPV4 address – address space, classful addressing, classless addressing, subneting – DHCP – Internet protocol (IP) – datagram format, fragmentation – IPV4 datagram security – Routing algorithms – Distance-vector, Link-state, path vector – unicasting, multicasting, broadcasting

MODULE III – TRANSPORT LAYER
Transport layer services - process-to-process communication, encapsulation and decapsulation, pushing, flow control, error control, congestion control, connectionless and connection oriented protocols – Transport layer protocols – simple, stop and wait, go back-N, Selective repeat, piggy backing - UDP – user datagram, services, applications – TCP – services, features, segment, connection – SCTP – services, features

MODULE IV – APPLICATION LAYER

Application layer services - WWW – architecture, URL – HTTP – connections, message formats - FTP – control connections, data connections - Electronic mail – architecture, sending, receiving mails, SMTP, transfer phases, POP and IMAP - TELNET – DNS – name space, DNS in internet, resolution, resource records, DNS messages – Dynamic DNS

TEXT BOOK(S):

1. Data Communications and Networking – Behrouz A. Forouzan – McGraw Hill Edn.-Fourth Edition/Fifth Edition

REFERENCES:

1. Computer Networks – Andrew S. Tanenbaum – Prentice Hall-Fifth Edition
2. Data Communication & Networks - William Stalling- Prentice Hall-Tenth Edition
3. Data Communications, Computer Networks and Open Systems –Fred Halsall , Addison-Wesley, 1996

COURSE TITLE	:	MICROCONTROLLERS
COURSE CODE	:	6132
COURSE CATEGORY	:	A
PERIODS/WEEK	:	5
PERIODS/SEMESTER	:	75
CREDITS	:	5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	AVR Microcontrollers & Assembly Language Programming	18
2	AVR Programming in C	18
3	Timer, Interrupt, Programming	19
4	Interfacing sub systems with AVR	20

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	To understand AVR Microcontrollers and its Architecture
	2	To know AVR Assembly Language Programming
	3	To apply Assembly Language Instructions in AVR
2	1	To understand I/O Port Programming
	2	To understand AVR Programming in C
3	1	To understand Timer and Interrupt Programming
4	1	To understand the interfacing of various systems with AVR microcontroller

Specific Outcomes:
MODULE –I AVR Microcontrollers & Assembly Language Programming
      1.1 To understand AVR Microcontrollers and its Architecture
            1.1.1 To explain the basics of Microcontrollers
            1.1.2 To Compare and contrast Microcontrollers and Microprocessors
            1.1.3 To describe AVR family of Microcontrollers
            1.1.4 To list the AVR features
            1.1.5 To explain AVR Architecture with block diagram
      1.2 To comprehend AVR Assembly Language Programming
            1.2.1 To state the usage of instructions in Data Memory
            1.2.2 To write AVR data formats
            1.2.3 To explain the Program counter and Program ROM space
            1.2.4 To explain the RISC and Harvard architecture in AVR
      1.3 To apply Assembly Language Instructions in AVR
            1.3.1 To Explain Branch instructions and looping
            1.3.2 To Explain Call instructions and stack
            1.3.3 To explain Time Delay Loop

MODULE – II AVR Programming in C

    2.1 To Describe I/O Port programming
        2.1.1 To explain I/O port programming in AVR
        2.1.2 To explain I/O bit Manipulation Programming .
    2.2 To understand AVR Programming in C
        2.2.1 To list Data types in C
        2.2.2 To explain Time Delays in C
        2.2.3 To discuss   I/O programming in C
        2.2.4 To explain Logic Operations in C

MODULE – III Interfacing sub systems with AVR

    3.1 To understand Timer and Interrupt Programming in C
        3.1.1 To describe Timers 0,1, and 2 programming
        3.1.2 To explain Counter Programming
        3.1.3 To explain AVR interrupts
        3.1.4 To illustrate Timer interrupts

MODULE –IV Interfacing sub systems with AVR
    4.1 To understand the interfacing of various systems with AVR microcontroller
        4.1.1 To explain AVR serial port programming
        4.1.2 To Illustrate LCD interfacing
        4.1.3 To Illustrate Keyboard interfacing
        4.1.4 To Illustrate ADC interfacing
        4.1.5 To Illustrate DAC interfacing
        4.1.6 To Illustrate Sensor interfacing

CONTENT DETAILS

MODULE –I   AVR Microcontrollers & Assembly Language Programming
Basics of Microcontrollers -   Compare and contrast Microcontrollers and Microprocessors –Overview of AVR family of Microcontrollers - AVR features - AVR Architecture with block diagram – The general Purpose Registers in the AVR

AVR Data Memory-Using instructions with the Data Memory – AVR status Register - AVR data formats - Program counter and Program ROM space- RISC and Harvard architecture in AVR

Branch instructions and Looping- Unconditional branch instruction - Call instructions and stack – AVR Time delay and Instruction pipeline

MODULE – II   AVR Programming in C
I/O port programming in AVR – I/O bit Manipulation Programming.
Data types and Time Delays in C - I/O programming in C –
Logic Operations in C- Data Conversion Prpograms in C – Data Serialization in C

MODULE – III   Timer, Interrupt, Programming
Programming Timers 0, 1, and 2 - Counter Programming - AVR interrupts – Programming Timer Interrupts –Programming External Hardware interrupts – Interrupt priority in the AVR -

MODULE –IV   Interfacing sub systems with AVR
Basics of Serial Communication – ATMEGA32 connection to RS232 - AVR serial port programming in C- LCD interfacing - Keyboard interfacing - ADC interfacing -- DAC interfacing - Sensor interfacing

Note: Assembly Language Programming is not necessary from Module II onwards.

TEXT BOOK:

1. The AVR Microcontroller and Embedded Systems Using Assembly and C By Muhammad Ali Mazidi, Sarmad Naimi, & Sepehr Naimi - Pearson Education

REFERENCES:

1. Introduction to Embedded Systems - Shibu K.V, Mc Graw Hill.First Edition
2. Embedded C - Michael J. Pont, Pearson Education, Second Edition
3. Embedded Systems - Raj Kamal, , Mc Graw Hill, Second Edition

WEB SITE:

http://freevideolectures.com

COURSE TITLE	:	SMART DEVICE PROGRAMMING
COURSE CODE	:	6133
COURSE CATEGORY	:	A
PERIODS/WEEK	:	5
PERIODS/SEMESTER	:	75
CREDITS	:	4

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Android and Development Environments	20
2	Simple Android Application Development	19
3	UI Design and Data storage	18
4	HTML 5.0 and JavaScript	18

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	Describe Different mobile technologies
2	1	Develop Simple Android application
3	1	Describe android UI designing and Data Storage
	2	Applications with Data Storage and retrieval
	3	Develop applications and publish
4	1	Develop applications using HTML 5 and JavaScript

Specific Outcomes:

Module 1   Android and Development Environments
   1.1   To Understand Different mobile technologies
         1.1.1 To List various mobile technologies
         1.1.2 To Compare Apple IOS and Android
         1.1.3 To describe how Eclipse, Android Studio and Android sdk is installed
         1.1.4 To describe how Android virtual device is created
         1.1.5 To explain how a "Hello World" program is developed and run.
         1.1.6 To List features of Eclipse and Android Studio for professional software
         Development

Module 2   Simple Android Application Development

   2.1 To Understand Simple Android application Development
         2.1.1 To explain how Android Virtual device operates
         2.1.2. To describe activity in android
         2.1.3. To explain how activities can be linked using intent
         2.1.4. To describe how data can be passed between activities
         2.1.5. To List various android basic components

Module 3   UI Design and Data storage
   3.1. To Understand android UI designing
        3.1.1. List different layout systems.
        3.1.2. List basic and popular components in android UI
        3.1.3. Describe how data storage is done in Android

   3.2 To Understand Data Storage
        3.2.1. List various storage technologies
        3.2.2. Explain how SQLite database and operations are used for data storage and retrieve
        3.2.3. Understand various content Providers and their relative advantages and disadvantages3.3 To develop applications and publish
        3.3.1. Explain how SMS service is provided in Android
        3.3.2. Describe how to publish the developed application in Google Play Store

Module 4   Mobile Application development using HTML 5.0 and JavaScript
   4.1 To develop applications using HTML 5 and JavaScript
        4.1.1. Describe how HTML 5 is used for mobile application development
        4.1.2. Describe how JavaScript is used for mobile application development
        4.1.3. List HTML 5 tags and attributes for mobile development
        4.1.4. Describe advantages and uses of PhoneGap
        4.1.5. Build Applications with camera, geolocation, Media Files, Storage options

<u>**CONTENT DETAILS**</u>

Module1. Introduction to Android and Development Environments
Various mobile technologies- Apple IOS – Android operating system- install and configure Eclipse, Android Studio andn Android sdk - android virtual device- creation of android virtual device- sample programs – features of Eclipse and Android studio.

Module 2. Simple Android Application Development
Sample programs- Operation of Android Virtual device - activity in android –Life cycle of an activity intent – linking activities using intent- data passing between activities using intent -   android components: activities, services, broadcast receivers, content providers.

Module 3. UI Design and Data storage
UI components: -Layout: Linear, Absolute, Table, Frame. - Views: Text, Edit, Button, ImageButton, CheckBox, ToggleButton, RadioButton, RadioGroup, List, Image, Grid . Menus – Options, Context- Action bar, Notifications- data storage in Android- various storage technologies- operations for data storage and retrieval to/from internal and external memory - SQLite database- - content Providers and their relative advantages and disadvantages - SMS service in Android - publish application in Google Play Store.

Module 4 . Mobile Application development using HTML 5.0 and JavaScript
HTML components for mobile applications-HTML 5 tags and attributes for mobile development- Styling Mobile Pages with CSS3 - Simple applications using HTML5 and JavaScript- Building a mobile web application - Introduction to PhoneGap.

TEXT BOOK(S):

1**. Beginning Android   Application Development- Wei-Meng Lee- Wrox-First Edition.**
2. **HTML 5 Mobile Application Development-   SAMS publications- Jennifer KyrninJennifer Kyrnin.-First Edition**

REFERENCE:

Beginning PhoneGap – Thomas Myer-2011

COURSE TITLE	:	MOBILE COMMUNICATION
COURSE CODE	:	6134
COURSE CATEGORY	:	E/A
PERIODS/WEEK	:	5
PERIODS/SEMESTER	:	75
CREDITS	:	5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Cellular Wireless Networks	18
2	Wireless Networking	18
3	Wireless LAN Technology	19
4	Bluetooth and IEEE 802.15	20

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	Understand Cellular Wireless Systems
	2	Understand Multiple Access in Wireless Networks
2	1	Understand satellite communication
	2	Study wireless systems operations and standards
	3	Understand Mobile IP and WAP
3	1	Understand Wireless LAN Technology
	2	Understand Wi-Fi and IEEE 802.11 standard
4	1	Understand Bluetooth Technology
	2	Understand IEEE 802.15 protocol

Specific Outcomes:

MODULE – I: Cellular Wireless Networks
1.1 To understand Cellular Wireless Networks
    1.1.1. Discuss Frequency reuse, Increasing capacity, operation, Handoff in Cellular Networks.
    1.1.2. Describe first generation analog cellular networks
    1.1.3. Explain second generation cellular systems TDMA
    1.1.4. Describe Second Generation CDMA Cellular Systems
    1.1.5. Discuss Third Generation (3G) Cellular Systems
    1.1.6. Explain CDMA Design considerations
1.2 To understand Multiple Access in Wireless Networks
    1.2.1 Describe Frequency Division Multiple Access
    1.2.2 Describe Time Division Multiple Access

CONTENT DETAILS

Module I Cellular Wireless Networks

Cellular Wireless Networks -Frequency reuse - Increasing capacity – operation – Handoff- First generation analog cellular networks - Second generation cellular systems TDMA - Second Generation CDMA Cellular Systems - Third Generation (3G) Cellular Systems - CDMA Design considerations.

Multiple Accesses in Wireless Networks - Frequency Division Multiple Access (FDMA) - Time Division Multiple Access (TDMA) - Code Division Multiple Access (CDMA) - Space Division Multiple Access - Packet Radio Access - Multiple accesses with collision avoidance

Module II Wireless Networking

Wireless Networking - Satellite Communication - satellite parameters - Satellite configurations - Capacity allocation frequency division - Capacity allocation time division

Wireless System Operations and Standards - cordless systems - Wireless Local Loop - IEEE 802.16 Broadband wireless access standards

Mobile IP and WAP - Operation of Mobile-IP - Architectural overview of Wireless Application Protocol

Module III Wireless LAN Technology

Wireless LAN Technology - Single cell Configuration - multiple cell configurations - Requirements - Infrared LAN - Describe Spread Spectrum LAN - Narrowband Microwave LAN

Wi-Fi and IEEE 802.11 standard - IEEE 802 Architecture - IEEE 802.11 Architecture and services - 802.11 Medium Access Control - IEEE 802.11 Physical Layers - Describe Wi-Fi Protected Access

Module IV Bluetooth and IEEE 802.15

Bluetooth Technology - Bluetooth applications - architecture – scatternet-piconet-**IEEE 802.15 protocol - A**rchitecture of WPAN - IEEE 802.15.3 protocol for WPAN-Bluetooth low energy-Wireless Sensor Network.

TEXT BOOK(S):

1. Wireless Communications & Networks : Author: William Stallings - Pearson –Second Edition

REFERENCE:

1. Wireless and Mobile Networks: Concepts and Protocols : Author: Dr.Sunilkumar S. Manvi & Mahabaleshwar -: Wiley – India-2010
2. Undamentals Of Wireless Communication Tse Cambridge University Press First Edtion

COURSE TITLE	:	NETWORK INFRASTRUCTURE MANAGEMENT
COURSE CODE	:	6135
COURSE CATEGORY	:	E/A
PERIODS/WEEK	:	5
PERIODS/SEMESTER	:	75
CREDITS	:	5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Networking Control Devices	18
2	IP addressing, Access Control	18
3	Basics of Router Configuration	19
4	IP Routing Protocols	20

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	Understand the present networking scenario
	2	Understand the commonly used networking devices
	3	Understand cable categories, connection tools, and cable structures
2	1	Understand IP addressing- IPV4 and IPV6
	2	Understand Domain and work group users
	3	Understand Securing files and folders
3	1	Basics of Router Configuration
4	1	Understand TCP/IP Dynamic Routing Protocols
	2	Understand Configuring IP Routing Protocols
	3	Understand Network Troubleshooting, Performance Tuning

Specific Outcomes:

Module I - Networking Control Devices
1.1 Understand the present networking scenario.
    1.1.1 Explain current networking scenario.
    1.1.2 Describe Network Infrastructure Management
1.2 Understand the commonly used networking devices
    1.2.1 Explain about Switch, Hub and Router
    1.2.2 Explain Repeaters, VPN devices and Modem
    1.2.3 Discuss about wireless network devices (wi-fi, Bluetooth, wi-max)

1.3 Understand cable categories, connection tools, and cable structures
   1.3.1 Describe Bounded media–Twisted Pair (straight through, Cross-Over, Roll-Over)
   1.3.2 Explain Co-axial Cable
   1.3.2 Explain unbounded media - Fiber Optics media

Module II   - IP addressing, Access Control and User Permission Settings

2.1 Understand IP addressing- IPV4 and IPV6
   2.1.1 State Versions of IP addressing
   2.1.2 Explain the Classes of IP address
        Describe subnet mask
   2.1.5 Explain the Concept of DNS and DHCP server
   2.1.5 Explain the working of DNS and DHCP
   2.1.6 List the Installation requirements of DNS and DHCP

2.2 Understand Domain and work group users
   2.2.1 Explain Managing users and group accounts
   2.2.2 Describe how to add group memberships
   2.2.3 List the steps for creating child domain
   2.2.4 Explain about domain controllers
   2.2.5 Explain about Trust relations

2.3 Understand Securing files and folders
   2.5.1 Describe about set up share permission
   2.3.2 Explain how to set up security permission
   2.3.3 Explain remote desktop connections
   2.3.4 Describe Remote Desktop Assistance
   2.3.1 Explain windows firewall
   2.3.2 Explain Encryption techniques
   2.3.3 Describe IP security
   2.3.4 Explain system backup
   2.3.5 Explain active directory backup

Module III   Basics of Router Configuration

3.1 . Understand Routers.
   3.1.1 Describe Router Hardware
   3.1.2 Explain Memory on Routers
   3.1.3 Explain 'Talking to Router' (Through the Console).
   3.1.4 Explain Router IOS
   3.1.5 Explain Configuring Router with <copy> and TFTP
   3.1.6 Explain Basic Router Configuration
   3.1.7 Explain Disaster Recovery
   3.1.8 Explain about Setting the Bootstrap Behavior
   3.1.9   Describe Configuration Register Settings
   3.1.10 Explain upgrading Router's IOS
   3.1.11 Explain Configuring the Router's Clock
   3.1.12 Explain IOS Message Logging.

3.1.13 Explain Setting Up Buffered Logging.
3.1.14 Explain Setting Up Trap Logging
3.1.15 Explain IOS Authentication and Accounting.

Module IV Configuration of IP Routing Protocol

4.1 Understand TCP/IP Dynamic Routing Protocols
    4.1.1 Describe General Routing Concepts and Terms
    4.1.2 Explain TCP/IP Static Routing
    4.1.3 Explain TCP/IP Interior Gateway Protocols
    4.1.4 Explain TCP/IP Exterior Gateway Protocols

4.2 Understand Configuring IP Routing Protocols
    4.2.1 Choose the Right Protocol
    4.2.2 Explain Route Selection
    4.2.3 Display General Routing Information
    4.2.4 Manage Static Routing.
    4.2.5 Configure Dynamic IGP and EGP IP Routing Protocols
    4.2.6 Explain Route Control and Redistribution

4.3 Understand Network Troubleshooting, Performance Tuning, and Management Fundamentals.
    4.3.1 Explain Network Analysis and Performance Tuning
    4.3.2 Develop Troubleshooting Skills.
    4.3.3 Explain Network Management Fundamentals

CONTENT DETAILS

Module I Networking Control Devices

Familiarization of networking Control DevicesCurrent networking scenario-importance of Network Infrastructure Management-
Commonly used networking devices- Switch, Hub and Router- Repeaters, VPN devices and Modem-wireless network devices (wi-fi, Bluetooth, wi-max).
Cable categories, connection tools, and cable structures Twisted Pair (straight through, Cross-Over, Roll-Over) Co-axial Cable Fiber Optics media

Module II IP addressing, Access Control and User Permission Settings

Domain and work group network architecture:-client server architecture -the Requirements of domain network-Domain controllers and Active directory.
 Analyze IP addressing-IPV4 and IPV6:-Versions of IP addressing-Classes of IP address-Understanding subnet mask-Concept of DNS DHCP server -Working of DNS and DHCP-Installation requirement of DNS and DHCP.
Domain and work group users:-Managing user, group accounts-Adding group memberships-Physical and logical components of domain-Understanding child domain-additional domain controller-Trust relation.Securing files and folders:- setting share permission-setting security permission. Remote

Management:- remote desktop connections-Remote Desktop Assistance. Operating system security overview:- windows firewall- Encryption techniques-IP security-system backup- active directory backup.

Module III   Basics of Router Configuration

Introduction to Routers. Router Hardware-Memory on Routers- 'Talking to Router' (Through the Console).- Router IOS- Configuring Router with <copy> and TFTP-Basic Router Configuration-Disaster Recovery-Setting the Bootstrap Behavior-Configuration Register Settings-t upgrading Router's IOS-Configuring the Router's Clock-IOS Message Logging.-Setting Up Buffered Logging-Setting Up Trap Logging-IOS Authentication and Accounting.

Module IV IP Routing Protocols
TCP/IP Dynamic Routing Protocols:General Routing Concepts and Terms-TCP/IP Static Routing-TCP/IP Interior Gateway Protocols-t TCP/IP Exterior Gateway Protocols
Configuring IP Routing Protocols on Routers: Choosing the Right Protocol-Route Selection-General Routing Information-Managing Static Routing- Configure ting Dynamic IGP and EGP IP Routing Protocols-Route Control and Redistribution.
Network Troubleshooting, Performance Tuning, and Management Fundamentals: Network Analysis and Performance Tuning-Develop Troubleshooting Skills-Network Management Fundamentals.

TEXT BOOK(S):

1. Understanding the Network A Practical Guide to Internetworking , Michael J. Martin New Riders Publishing

REFERANCE:

1. Richard McMohan Introduction to Networking Tata McGraw Hill
2. Behrouz A. Forouzan – Local Area Networks McGraw Hill Edn.
3. Todd Lammle- CiscoCertified Network Associate 3/E Wiley India Pvt. Ltd/Sybex Jill Spealman, Planning, Implementing, and Maintaining a Windows Server, Microsoft Press

COURSE TITLE	:	SOFTWARE TESTING
COURSE CODE	:	6136
COURSE CATEGORY	:	ELECTIVE
PERIODS/WEEK	:	5
PERIODS/SEMESTER	:	75
CREDITS	:	5

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Testing methodology	19
2	Testing techniques	19
3	Test automation and testing tools	19
4	Debugging process	18

Course General Outcomes:

Sl.	G.O	On completion of this course the student will be able :
1	1	To understand testing methodology
2	1	To understand Testing techniques
	2	To omprehend various techniques
3	1	To understand test automation and testing tools
4	1	To understand the process of debugging

Specific Outcomes:

MODULE – I: Testing Methodology

    1.1 To understand testing methodology
        1.1.1 Explain the goals of testing
        1.2.1 Explain the model for software testing and software testing process
        1.3 1 Describe the software testing life cycle (STLC) and phases
        1.4.1 Explain software testing methodology
        1.5.1 Explain how verification and validation of code is done

MODULE – II: Testing Techniques

    2.1 To understand Testing techniques
        2.1.1 explain various dynamic testing techniques
        2.1.2 Describe Black box testing techniques
        2.1.3 Describe Boundary value analysis
        2.1.4 Describe Equivalence class testing
        2.1.5 State table based testing
        2.1.6 Describe Decision table based testing

2.1.7 State Cause effect graphing based testing
2.1.8 Describe the method of Error guessing
2.1.9 Describe White box testing techniques
2.1.10 Describe the Need of white box testing
2.1.11 Explain the Logic coverage criteria
2.1.12 Describe Basis path testing
2.1.13 Describe Data flow testing
2.1.14 Describe Mutation testing

2.2 Explain various static testing techniques
2.2.1 Describe the methods of code inspections
2.2.2 Describe how structured walkthroughs are benefitted
2.2.3 State the need of technical reviews
2.2.4 Describe about validation testing
2.2.5 Explain how unit validation testing is carried out
2.2.6 Explain the need and methods of Integration testing
2.2.7 Describe about function testing
2.2.8 Explain system testing
2.2.9 Describe the steps in acceptance testing
2.2.10 Describe what is regression testing
2.2.11 Differentiate between progressive and regression testing
2.2.12 Describe the test for regression testability
2.2.13 State the objectives of regression testing
2.2.14 Explain the different regression testing techniques

MODULE – III: Test Automation and Testing Tools

3.1 To understand test automation and testing tools
3.1.1 Describe advantages of test automation
3.1.2 Explain the Guidelines for automated testing
3.1.3 State the categories of testing tools
3.1.4 Explain the selection of testing tools
3.1.5 Explain the open source testing tools – CUT, Cgreen,Emma and Findbugs
3.1.6 Describe about commercial testing tools – WinRunner, SilkTest, LoadRunner, Jmeter, and TestDirector
3.1.7 State how object oriented testing is done
3.1.8 Describe how testing of web based systems are done

MODULE – IV: Debugging Process
4.1 To understand the process of debugging
4.1.1 Explain the methods of bug tracking
4.1.2 Describe the process of debugging
4.1.3 Explain different debugging techniques
4.1.4 Explain how to correct the bugs
4.1.5 Explain different debugging tools and different types of debuggers

<div align="center">**CONTENT DETAILS**</div>

MODULE – I: Testing Methodology

Goals of testing - Model for software testing and software testing process - Software Testing Life Cycle (STLC) and phases - Software testing methodology - Verification and validation of code

MODULE – II: Testing Techniques

Dynamic testing techniques - Black box testing techniques - Boundary value analysis, Equivalence class testing, Table based testing, Decision table based testing, Cause effect graphing based testing, method of Error guessing, White box testing techniques - Need of white box testing, Logic coverage criteria, Basis path testing, Data flow testing, Mutation testing

Static testing techniques - Methods of code inspections, Structured walk throughs, Need of Technical reviews, Validation testing, Unit validation testing, Methods of Integration testing, Function testing, System testing, Acceptance testing, Regression testing, Progressive and regression testing, Test for regression testability, Objectives of regression testing, different regression testing techniques

MODULE – III: Test Automation and Testing Tools

Test Automation - Advantages of test automation, Guidelines for automated testing

Testing Tools - Categories of testing tools, selection of testing tools, Open source testing tools – CUT, Cgreen,Emma and Findbugs, Commercial testing tools – WinRunner, SilkTest, LoadRunner, Jmeter, and TestDirector

Object oriented testing, Web based system testing

MODULE – IV: Debugging Process

Methods of bug tracking, Process of debugging, Different debugging techniques, Correcting the bugs, Debugging tools, Types of debuggers

TEXT BOOK(S):

1. Software Testing, Principles and Practice – Naresh Chauhan – Oxford University Press-First Edition.
2.

REFERENCES:

1. Software Engineering : **Ian Sommerville**, Pearson,Nineth Edition
2. Software Engineering a practitioners approach – Roger S Pressman,Seventh Edition

COURSE TITLE	:	**SMART DEVICE PROGRAMMING LAB**
COURSE CODE	:	**6138**
COURSE CATEGORY	:	**A**
PERIODS/WEEK	:	**5**
PERIODS/SEMESTER	:	**75**
CREDITS	:	**5**

General Outcomes:

1. To install software tools required for mobile technologies
2. To develop simple android applications
3. To design and implement user interfaces
4. To develop applications using data storage
5. To develop mobile applications using HTML 5.0 and JavaScript

Specific Outcomes:

1.1 Install Eclipse/Android studio
1.2 Install android sdk
1.3 Configure eclipse/Android Studio for android

2.1 Create Hello World application
2.2 Create activity bases applications
2.3 Implement programs for Displaying a Dialog Window Using an Activity
2.4 Implement programs for linking Activities with intents
2.5 Implement for Passing Data to the Target Activity
2.6 Implement program for Calling Built-In Applications Using Intents

3.1 Implement program using UI components
1. To Create three pages using layout system - Liner layout, Relative layout and Table layout respectively.
2. To Navigate to these screen from the home page that you created In module 1
3. To Include alert dialog and country listing list view.
3.2 Write android web applications
3.3 Create custom Android Virtual Device(AVD)
3.4 Emulate device with different screen size
3.5 Make SMS and phone call

4.1 Write applications utilising data base and SQLite commands
4. To Create a SQLite database and perform query operations.
5. To Insert data in database table
6. To Retrieve and display details in screen
4.2 Transfer files between emulator and PC
4.3 Create an android application with login page and a home page
4.4 Compile and debug the application.
4.5 Install application in both emulator and device.
5.1 Design and Develop mobile application using HTML 5.0 and JavaScript
5.2 Build HTML 5.0 – JavaScript application using PhoneGap
5.3 Install an application on a mobile device

COURSE TITLE   :   MICROCONTROLLER LAB
COURSE CODE   :   6139
COURSE CATEGORY   :   A
PERIODS/WEEK   :   5
PERIODS/SEMESTER   :   75
CREDITS   :   3

General Outcomes :

Sl.	G.O	Student will be able to
1	1	To know AVR Assembly Language Programming
2	1	To understand Embedded C
	2	To understand AVR Programming in C
3	1	To understand Timer/Counter and Interrupt Programming
4	1	To understand the interfacing of various systems with AVR microcontroller

Specific Outcomes:

1.1 Familiarisation with microcontroller development system board based AT Mega32
     (such as Ardino, MicroHope etc)
       1.1.1 The interfacing with computer, transfer of programs, executing simple
             programs.

1.2 To Understand Assembly Programming of AVR
       1.2.1 Write simple assembly language programs (Bit manipulation instructions -
             on/off , flashing, rotating LEDs)

2.1 Familiarisation with compilers – gcc compiler tools
       2.1.1 Write simple programs in AVR using C to implement Bit manipulation,
             arithmetic and logical, data conversion

3.1 To understand Interrupts and Timer/Counter Programming
       3.1.1 Write C programs to demonstrate the working of interrupts and
             timer/counters

4.1 To understand Interfacing in AVR
       4.1.1 Write C programs implement interfacing of peripherals (LCD, Serial port,
             keyboard, ADC,DAC, sensors)