PROPOSAL FOR BE(CSE) SEMESTER-VIII SCHEME:-

Sl.	Course Code	Course Title	Scheme of Instruction				Scheme of Examination			Credits
			L	T	P/D	Contact Hrs/Wk	CIE	SEE	Duration in Hrs	
Theory Courses										
1	PE-VI	Professional Elective – VI	3	-	-	3	30	70	3	3
2	OE-III	Open Elective – III	3	-	-	3	30	70	3	3
Practical/ Laboratory Courses										
7	PW861 CS	Project Work – II	-	-	16	16	50	100	-	8
			06	-	16	22	110	240	06	14

Profession Elective – VI		
Sl.	Course Code	Course Title
1	PE 827 CS	Mobile Computing
2	PE 828 CS	Semantic Web & Social Networking
3	PE 829 CS	Cyber Security& Forensics

Open Elective – III		
Sl.	Course Code	Course Title
1	OE 881 CE	Road Safety Engineering
2	OE 882 IT**	Software Engineering
3	OE 883 EC	Principles of Electronic Communications
4	OE 884 EE	Illumination and Electric Traction systems
5	OE 885 ME	Mechatronics

**SHOULD NOT BE OPTED BY BE(CSE)

Course Code	Course Title						Core / Elective
PE 827 CS	**Mobile Computing**						**Elective**
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	3	-	-	-	30	70	3

Course Objectives

- ➢ To introduce basics of wireless voice and data communication technologies
- ➢ To build working knowledge on various telephone and satellite networks
- ➢ To study the working principles of wireless LANs and standards
- ➢ To study principles of adhoc networks and routing
- ➢ To gain knowledge on integration of mobile networks into Internet
- ➢ To build skills in working with wireless application protocols to develop mobile applications.

Course Outcomes

After completing this course, the student will be able to

1. Understand the applicability of the components of radio transmission and 4G devices.
2. Understand and apply various techniques involved in transmission for realistic scenarios
3. Discuss and use the architecture, standards and services of wireless
4. Illustrate the route discovery process of Adhoc Network Routing protocols.
5. Identify the File System support for mobility, and understand the constraints and security aspects of Mobile operating system.

UNIT-I

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – Antennas – Multiplexing – Modulations – Spread spectrum, Cellular Wireless Networks,
4G -Introduction, features and challenges, Applications of 4G, 4G Network architecture

UNIT-II

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks - Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB – DVB

UNIT-III

Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.

UNIT-IV

Mobile IP, Dynamic Host Configuration Protocol, Routing in MANETs: DSDV, DSR, AODV and ZRP. MANETSvs VANETs

UNIT-V

WAP, and WAP 2.0, Mobile Transaction models, File Systems and Mobility Management, Mobile Device Operating Systems – Special Constraints & Requirements, Mobile Payment System – Security Issues

Suggested Readings:

1. Jochen H. Schiller, "Mobile Communications", Addison Wesley, Second Edition, 2003.
2. William Stallings,"Wireless Communications and Networks", PHI/Pearson Education, 2002.
3. KavehPahlavan, Prasanth Krishnamurthy, "Principles of Wireless Networks", Prentice Hall, 2003.
4. UweHansmann, LotharMerk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, 2003. 5. Krzysztof Wesolowski, Mobile Communication Systems, John Wiley and Sons Ltd, 2002.

Course Code	Course Title						Core / Elective
PE 828 CS	**Semantic Web & Social Networking**						**Elective**
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	3	-	-	-	30	70	3

Course Objectives

➢ To learn Knowledge Representation for the Semantic Web & Web Application
➢ To learn Social Network Analysis and semantic web
➢ To understand the role of ontology and inference engines in semantic web
➢ To explain the analysis of the social Web and the design of a new class of
➢ To describe how the Semantic Web provides the key in aggregating and to incorporing user generated metadata and other clues left behind by users.

Course Outcomes

After completing this course, the student will be able to

➢ Create ontology
➢ Build blogs and social networks
➢ Understand the basics of Semantic Web and Social Networks, Electronic sources for network analysis
➢ Modeling and aggregating social network data, Develop social-semantic applications.
➢ Evaluate Web- based social network and Ontology

UNIT –I: Web Intelligence Thinking and Intelligent Web Applications, The Information Age ,The World Wide Web, Limitations of Today's Web, The Next Generation Web, Machine Intelligence, Artificial Intelligence, Ontology, Inference engines, Software Agents, Berners-Lee www, Semantic Road Map, Logic on the semantic Web.

UNIT -II: Knowledge Representation for the Semantic Web Ontologies and their role in the semantic web, Ontologies Languages for the Semantic Web – Resource Description Framework(RDF) / RDF Schema, Ontology Web Language(OWL), UML, XML/XML Schema

UNIT-III: Ontology Engineering Ontology Engineering, Constructing Ontology, Ontology Development Tools, Ontology Methods, Ontology Sharing and Merging, Ontology Libraries and Ontology Mapping, Logic, Rule and Inference Engines.

UNIT-IV: Semantic Web Applications, Services and Technology Semantic Web applications and services, Semantic Search, e-learning, Semantic Bioinformatics, Knowledge Base ,XML Based Web Services, Creating an OWL-S Ontology for Web Services, Semantic Search Technology, Web Search Agents and Semantic Methods

UNIT-V: .Social Network Analysis and semantic web What is social Networks analysis, Development of the social networks analysis, Electronic Sources for Network Analysis – Electronic Discussion networks, Blogs and Online Communities, Web Based Networks. Building Semantic Web Applications with social network features.

TEXT BOOKS:
1. Thinking on the Web - Berners Lee, Godel and Turing, Wiley inter science, 2008.
2. Social Networks and the Semantic Web, Peter Mika, Springer, 2007.

REFERENCE BOOKS:
1. Semantic Web Technologies, Trends and Research in Ontology Based Systems, J.Davies, R.Studer, P.Warren, John Wiley & Sons.,2006
2. Semantic Web and Semantic Web Services -Liyang Lu Chapman and Hall/CRC Publishers,(Taylor & Francis Group)
3. Information Sharing on the semantic Web – HeinerStuckenschmidt; Frank Van Harmelen, Springer Publications. ,2005
4. Programming the Semantic Web, T.Segaran, C.Evans, J.Taylor, O'Reilly, SPD.2009
4. Towards the Semantic Web: Ontology Driven Knowledge Management, John Davis, Dieter Fensal, Frank Van Harmelen, J. Wiley.

Course Code	Course Title						Core / Elective
PE 829 CS	**Cyber Security& Forensics**						**Elective**
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	3	-	-	-	30	70	3

Course Objectives
➢ To learn the basic elements of Cyber Security and its role in real world
➢ To familiarize the various types of cyber-attacks and cyber-crimes
➢ Understand the broad concepts of technical, social & legal aspect of Cyber Security
➢ Insights to application of Cyber Security to resolve vulnerability and security problems.
➢ Develop professionals skilled in information/network security and forensic analysis of compromised systems.

Course Outcomes
After completing this course, the student will be able to
➢ Describe the basic elements of Cyber Security and its role in real world with operational and organizational security Aspects
➢ Understand various cyber-attacks, types of cybercrimes and cyber laws
➢ To protect oneself from cyber-attacks and ultimately and understanding of securing entire Internet community from such attacks
➢ Comprehend the purpose of Cyber Crime and its implication on mobile and wireless devices.
➢ Understand the basics of computer forensics.

Unit - I:
Introduction to Cyber Security
Overview of Cyber Security, Types of Vulnerability, Computer Criminals, CIA Triad, Cyber Threats:- Cyber Warfare-Cyber Crime-Cyber terrorism-Cyber Espionage.
Global Internet Governance – Challenges and Constraints, Need for a Comprehensive Cyber Security Policy, Need for a Nodal Authority, Need for an International convention on Cyberspace.

Unit - II:
Cyber Security Vulnerabilities and Cyber Security Assessments
Cyber Security Vulnerabilities-Overview, vulnerabilities in software and Hardware, Security system administration, Threats for Open Access to Organizational Data, Weak Authentication, Poor Cyber Security Awareness and Training.
Cyber Security Assessments- Overview, Access control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management.

UNIT – III:
Introduction to Cyber Crime and its implication on mobile and wireless devices
Cybercrime: Introduction to cyber-crime, intellectual property in the cyberspace, dimension of cybercrimes, mindset and skills of hackers and other cyber criminals.

Introduction to Cybercrime in Mobile and Wireless Devices, Proliferation of Mobile and Wireless Devices, Credit card Frauds in Mobile and Wireless Computing, Security Challenges in Mobile Devices and wireless devices, Types of Attacks on Mobile and wireless devices, Organizational Security Policies and Measures for securing Mobile and wireless devices.

UNIT- IV:

Cyber Forensics

Introduction to Cyber Forensics, Handling Preliminary Investigations, Controlling an Investigation, Conducting disk-based analysis, Investigating Information-hiding, Scrutinizing E-mail, Validating E-mail header information, Tracing Internet access, Tracing memory in real-time.

Unit –V:

Forensic Tools and Processing of Electronic Evidence

Introduction to Forensic Tools, Usage of Slack space, tools for Disk Imaging, Data Recovery, Vulnerability Assessment Tools, Encase and FTK tools, Anti Forensics and probable counters, retrieving information, process of computer forensics and digital investigations, processing of digital evidence, digital images, damaged SIM and data recovery, multimedia evidence, retrieving deleted data: desktops, laptops and mobiles, retrieving data from slack space, renamed file, ghosting, compressed files.

SUGGESTED READING

1. W.A.Coklin, G.White, Principles of Computer Security: Fourth Edition, McGrawHill,2016
2. AnandShinde, Introduction to Cyber Security: Guide to the World of Cyber Security, 2021.
3. John Vacca,Computer Forensics: Computer Crime Scene Investigation,2015
4. Cyber Forensics by Dejey& S. Murugan , OXFORD UNIVERSITY PRES, 2018

REFERENCE BOOKS

1. Cyber Security Essentials, James Graham, Richard Howard and Ryan Otson, CRC Press, First Edition, 2016.
2. Introduction to Cyber Security, Chwan-Hwa(john) Wu,J. David Irwin, CRC Press T&F Group, 2013
3. Fundamentals Of Forensic Science, Manjugouda R Patil, Dr.C.F.Mulimani, First Edition. 2020

Course Code	Course Title						Core / Elective
PW 861 CS	**Project Work - II**						**Core**
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	-	-	-	16	50	100	8

Course Objectives
- ➢ To enhance practical and professionalskills.
- ➢ To familiarize tools and techniques of systematic literature survey anddocumentation
- ➢ To expose the students to industry practices and teamwork.
- ➢ To encourage students to work with innovative and entrepreneurialideas

Course Outcomes
1. Demonstratetheabilitytosynthesizeandapplytheknowledgeandskillsacquiredintheacademic program to the real-worldproblems.
2. Evaluate different solutions based on economic and technicalfeasibility
3. Effectively plan a project and confidently perform all aspects of projectmanagement
4. Demonstrate effective written and oral communicationskills

The aim of Project work –II is to implement and evaluate the proposal made as part of Project Work - I. Students can also be encouraged to do full time internship as part of project work-II based on the common guidelines for all the departments. The students placed in internships need to write the new proposal in consultation with industry coordinator and project guide within two weeks from the commencement of instruction.

The department will appoint a project coordinator who will coordinate the following:
1. Re-grouping of students - deletion of internship candidates from groups made as part of projectWork-I
2. Re-Allotment of internship students to projectguides
3. Project monitoring at regular intervals

All re-grouping/re-allotment has to be completed by the 1st week of VIII semester so that students get sufficient time for completion of the project.

All projects (internship and departmental) will be monitored at least twice in a semester through student presentation for the award of sessional marks. Sessional marks are awarded by a monitoring committee comprising of faculty members as well as by the supervisor. The first review of projects for25 marks can be conducted after completion of five weeks. The second review for another 25 marks can be conducted after 12 weeks of instruction.

Common norms will be established for the final documentation of the project report by the respective departments. The students are required to submit draft copies of their project report within one week after completion of instruction.

Note: Three periods of contact load will be assigned to each project guide.