

**SCHEME OF INSTRUCTION & EXAMINATION
B.E. (Computer Science and Engineering) VIII – SEMESTER**

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	
Course Code	Course Title
OE 801 CE	Road Safety Engineering
OE 801CS**	Fundamentals of AL & ML
OE801EE	Smart Building Systems
OE802EE	Programmable Logic Controllers
OE801EC	Principles of Electronic Communications
OE801 IT**	Software Engineering
OE801ME	3D Printing Technologies
OE801AE	ELEMENTS OF ELECTRIC AND HYBRID VEHICLE TECHNOLOGY

Note- : ** Subject is not offered to the students of CSE and IT Department.

PC: Professional Course
MC: Mandatory Course

HS: Humanities and Sciences **L:** Lectures **T:** Tutorials **P:** Practical **D:** Drawing

CIE: Continuous Internal Evaluation
SEE: Semester End Examination (Univ. Exam)

Note-2: 1) Each contact hour is a Clock Hour
2) The practical class can be of two and half hour (clock hours) duration as per the requirement of a particular laboratory.

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 <ul style="list-style-type: none">➤ 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 <p>After completing this course, the student will be able to</p> <ol style="list-style-type: none">1. Understand the applicability of the components of radio transmission and 4G devices.2. Understand and apply various techniques involved in transmission for realistic scenarios3. Discuss and use the architecture, standards and services of wireless4. 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. MANETs vs 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. Kaveh Pahlavan, Prasanth Krishnamurthy, “Principles of Wireless Networks”, Prentice Hall, 2003.
4. Uwe Hansmann, 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.

Faculty of Engineering, with effect from Academic Year 2020-21

Course Code	Course Title						Core / Elective
OE801CE	ROAD SAFETY ENGINEERING						Open Elective-III
Prerequisite	Contact Hours per Week				CIE	SEE	Credits
	L	T	D	P			
-	3	-	-	-	30	70	3

Course Objectives:

- Introduction to various factors considered for road safety and management
- Explain the road safety appurtenances and design elements
- Discuss the various traffic management techniques

Course Outcomes:

After completing this course, the student will be able to

1. Understand the fundamentals of traffic safety analysis
2. Analyze Accident data
3. Remember the concepts of road safety in urban transport
4. Apply crash reduction techniques
5. Design of urban Infrastructure considering safety aspects.

UNIT – I

Introduction: Road Safety scenario in India and World, Road Accident Characteristics.

Traffic Safety Analysis: Fundamentals of Traffic Engineering - Basic Characteristics of Motor-Vehicle Traffic, Highway Capacity, Applications of Traffic Control Devices, Design of Parking Facilities, Traffic Engineering Studies; Statistical Methods in Traffic Safety Analysis – Regression Methods, Poisson Distribution, Chi- Squared Distribution, Statistical Comparisons.

UNIT – II

Accident Analysis: Accident Investigations and Risk Management, Collection and Analysis of Accident Data, Condition and Collision Diagram, Causes and Remedies, Traffic Management Measures and Their Influence on Accident Prevention, Assessment of Road Safety, Methods to Identify and Prioritize Hazardous Locations and Elements, Determine Possible Causes of Crashes, Crash Reduction Capabilities and Countermeasures, Effectiveness of Safety Design Features, Accident Reconstruction. Application of computer analysis of accident data.

UNIT – III

Road Safety in planning and Geometric Design: Vehicle And Human Characteristics, Road Design and Road Equipment, Redesigning Junctions, Cross Section Improvements, Reconstruction and Rehabilitation of Roads, Road Maintenance, Traffic Control, Vehicle Design and Protective Devices, Post Accident Care.

UNIT – IV

Faculty of Engineering, with effect from Academic Year 2020-21

Traffic Signals & Road signs: Traffic Signals, Factors affecting signal design, street lighting, Provisions for NMT Vehicles in India, Safety Provisions for Pedestrians & Cyclists, Road Signs and Pavement Markings.

Safety at Construction Site: Safety provisions for workers at construction site, Construction Zone markings, signs.

UNIT – V

Traffic Management safety audit: Traffic Management Systems for Safety, Road Safety Audits and Tools for Safety Management Systems, Road Safety Audit Process, Approach to Safety, Road Safety Improvement Strategies, ITS and Safety.

Suggested Readings:

1. Kadiyali L.R., *Traffic Engineering and Transport planning*, 9th Edition, Khanna Tech Publishers, 2013.
2. C.E.G. Justo, A. Veeraragavan and S. K. Khanna, *Highway Engineering*, 10th Edition, Nem Chand Publishers, 2017.
3. Donald Drew, *Traffic Flow Theory Chapter 14 in Differential Equation Models*, Springer, 1983
4. C. Jotinkhisty and B. Kent Lall, *Transportation Engineering – An Introduction*, 3rd Edition, Pearson publications, 2017
5. Rune Elvik, Alena Hoye, Truls Vaa, Michael Sorenson, *Handbook of Road Safety measures*, second Edition, Emerald Publishing, 2009.
6. Highway Research Programme (NCHRP) Synthesis 336. *A synthesis of Highway Research Board*, Washington D.C, 2016.

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 <ul style="list-style-type: none"> ➤ To enhance practical and professional skills. ➤ To familiarize tools and techniques of systematic literature survey and documentation ➤ To expose the students to industry practices and team work. ➤ To encourage students to work with innovative and entrepreneurial ideas Course Outcomes <ol style="list-style-type: none"> 1. Demonstrate the ability to synthesize and apply the knowledge and skills acquired in the academic program to the real-world problems. 2. Evaluate different solutions based on economic and technical feasibility 3. Effectively plan a project and confidently perform all aspects of project management 4. Demonstrate effective written and oral communication skills 							

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 project Work-I
2. Re-Allotment of internship students to project guides
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 for 25 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.