

# **8<sup>th</sup> Semester**

Course No.	Subject	Teaching Periods		Credits
		L	T	
PCCECE81	Wireless Communication	2	1	3

Section	Course contents	Hours
1	<b>Introduction to Cellular Mobile Systems:</b> A basic cellular system, performance criteria, Uniqueness of mobile radio environment, operation of cellular systems, planning a cellular system, Analog & digital cellular systems.	4
2	<b>Elements of Cellular Radio Systems Design:</b> General description of the problem, Concept of frequency reuse channels, co-channel interference reduction factor, desired C/I from a normal case in an omnidirectional antenna system, cell splitting, consideration of the components of cellular systems.	7
3	<b>Cell Coverage for Signal &amp; Traffic:</b> General introduction, obtaining the mobile point to point mode, Radio propagation characteristics: models for path loss, shadowing and multipath fading Propagation over water or flat open area, foliage loss, propagation nearin distance, long distance propagation, point to point prediction model characteristics, cellsite, antenna heights and signal coverage cells, mobile to mobile propagation.	7
4	<b>Cell Site Antennas and Mobile Antennas:</b> Characteristics of antennas, antenna at cell site, mobile antennas, LOS antennas, TDD, FDD.	5
5	<b>Frequency Management, Channel Assignment and handoff:</b> Frequency management, fixed channel assignment, non-fixed channel assignment, traffic & channel assignment, handoff, types of hand off and their characteristics, hand off analysis, dropped call rates & their evaluation.	7
6	<b>Multiple access techniques used in mobile wireless communications:</b> FDMA/TDMA, CDMA. FDM / TDM Cellular systems, Cellular CDMA, comparison of FDM / TDM systems and Cellular CDMA.	7
7	Capacity, soft capacity, erlang capacity and their usage.	3
8	<b>Global System for Mobile Communication (GSM) system overview:</b> GSM Architecture, Mobility management, Network signaling, Frequency allocation and control, Base System and Master System, GSM, DCS1800, Various value added services.	8
9	Introduction to GPRS, EDGE, UMTS, HSPDA, HSUPA, LTE.	4
<b>TOTAL HOURS FOR THE COURSE</b>		<b>52</b>

### References

1. Wireless Communication; Principles and Practice; T. S. Rappaport
2. Principles of Mobile Communication, G. L Stuber Kluwer Academic,
3. Wireless and Digital Communications; Dr. Kamil o Feher (PHI)
4. Mobile Communication HandBook; IEEE Press
5. Mobile Communication Engineering– Theory & Applications; TMH

Course No.	Subject	Teaching Periods		Credits
		L	T	
PCCECE82	<b>Computer Network &amp; Security</b>	2	1	3

Section	Course Contents	Hours
1	Introduction- Networks, The Internet, Protocols And Standards	4
2	Network Models - Layered Tasks, The OSI Model, Layers In The OSI Model, TCP/IP Protocol Suite, Addressing	4
3	Switching - Circuit-Switched Networks, Datagram Networks, Virtual-Circuit Networks, Structure of a Switch	3
4	Using Telephone and Cable Networks for Data Transmission	3
5	NETWORK LAYER, Logical Addressing	5
6	Network Layer: Internet Protocol - Internetworking: Need for Network Layer, Internet as a Datagram Network, Internet as a Connectionless Network, IPv4, Datagram, Fragmentation, Checksum, Options, IPv6, Advantages, Packet Format, Extension Headers , Transition From IPv4 to IPv6: Dual Stack, Tunneling, Header Translation	6
7	Network Layer: Address Mapping, Error Reporting, and Multicasting - Address Mapping: Mapping Logical to Physical Address: ARP, Mapping Physical to Logical Address: RARP, BOOTP, and DHCP, ICMP, IGMP, ICMPv6	6
8	Network Layer: Delivery, Forwarding, and Routing – Delivery, Forwarding, Unicast Routing Protocols, Multicast Routing Protocols	6
9	(TRANSPORT LAYER)_Process-to-Process Delivery: UDP, TCP, and SCTP - Process-To-Process Delivery, User Datagram Protocol (UDP): Well-Known Ports for UDP, User Datagram, Checksum, UDP Operation, Use of UDP, TCP: TCP Services, TCP Features, Segment, A TCP Connection, Flow Control, Error Control, Congestion Control, SCTP: SCTP Services, SCTP Features, Packet Format, An SCTP Association, Flow Control, Error Control, Congestion Control	3
10	(APPLICATION LAYER)_Domain Name System - Name Space, Domain Name Space, Distribution Of Name Space, DNS In The Internet, Resolution, DNS Messages, Types of Records, Registrars, Dynamic Domain Name System (DDNS), Encapsulation	2
11	Introduction: Need of security, Security attacks, services and mechanisms, Network security model	4
12	Network Security: Firewalls, IP Security, Virtual Private Networks and Intrusion Detection, Web Security-SSL and TLS	4
<b>TOTAL HOURS FOR THE COURSE</b>		<b>50</b>

### *References*

1. Data Communications and Networking by Behrouz A. Forouzan, Tata McGraw Hill
2. Computer Networks by Andrew S. Tanenbaum, Pearson Education
3. Data Communications and Computer Networks by W. Stallings
4. Cryptography and Network Security by Forouzan, PHI 4.

Course No.	Subject	Teaching Periods		Credits
		L	T	
BSCECE83	Organization of Engineering Systems & HR Management	2	1	3

Section	Course contents	Hours
1	Introduction to the subject and the course	1
2	<b>Module A: Basics of organizations and human resources management</b> Understanding organizations: nature and functions, Concerns of organizing engineering business and systems, Structure and process issues in running organizations, Design issues in running organizations, Operating organizations	12
3	<b>Module B: Effectiveness and performance</b> Cybernetics and systems framework, Socio-technical systems, Dealing with efficiency and excellence, Man-machine relationship, Longitudinal Thinking	12
4	<b>Module C: Human elements of functioning organizations</b> Concerns of recruitment, selection, skill formation and redeployment, Developing teams and leadership, Understanding motivation, Elements of human resources planning, Indian Industrial Law and managing industrial relations	13
<b>TOTAL HOURS FOR THE COURSE</b>		<b>38</b>

### **References**

1. Beer, Stafford(1975) *The Heart of Enterprise*, Preguin Press, London
2. Coulson-Thomas Colin,((1997) *The Future of Organisation: Achieving Excellence through Business Transformation* ,Kogen Page
3. Constantin Virgil Negoita (1992). *Cybernetics and Applied Systems*, CRS Press, USA
4. Dimitris N. Chorafas (2011). *Business, Marketing, and Management Principles for IT and Engineering*, Taylor and Francis,USA
5. Gautam Vinayshil(1988) *Comparative Manpower Planning Practices-Select Indian Experiences*, National Publishing House, New Delhi

Course No.	Subject	Teaching Periods	Credits
		P	
PCCECE81L	Wireless Communication Lab	2	1

### List of Experiments

1. Study of Dual SIM Phone.
2. Study of GSM.
3. Study of 3G.
4. Study of CDMA.
5. Study of Bluetooth

Note: Simulators used include following, where ever applicable OPNET, NS2, NS3.

Course No.	Subject	Teaching Periods	Credits
		P	
PCCECE82L	Computer Network & Security Lab	2	1

### List of Experiments

1. Study of different types of Network cables and practically implement the cross-wired cable and straight through cable using clamping tool.
2. Install and Configure Wired and Wireless NIC and transfer files between systems in LAN and Wireless LAN.
3. Install and configure Network Devices: HUB, Switch and Routers.
4. Connect the computers in Local Area Network.
5. Configure Host IP, Subnet Mask and Default Gateway in a System in LAN (TCP/IP Configuration).
6. Establish Peer to Peer network connection using two systems using Switch and Router in a LAN.
7. Configure Internet connection and use IPCONFIG,PING / Tracer and Net stat utilities to debug the network issues.
8. Transfer files between systems in LAN using FTP Configuration, install Print server in a LAN and share the printer in a network.
9. Study of basic network command and Network configuration commands.
10. Configure Network topologies using packet tracer software.
11. Demonstrate firewalls and Intrusion Detection System (IDS)

Course No.	Subject	Teaching Periods	Credits
		P	
PSIECE84	<b>Project (Phase-II)</b>	8	4

**DESCRIPTION:**

The Project work shall be carried out by a group of students .The maximum number of students in a group can be four (4). In the project work student shall choose a specific topic/area for the project. The selected areas shall encompass recent and emerging trends in technologies that prove beneficial for society in general and humanity in particular. Supervisor/mentor will be assigned to each student in the beginning of the 8<sup>th</sup> semester of their course. The Project Phase-II can encompass any of the following.

1. A fresh project to be chosen after the evaluation of 7<sup>th</sup> semester minor project is over .The deliverables include The working prototype of the project, Project Report and PPT presentation to be submitted at the end of the 8<sup>th</sup> semester.

2. The Remaining part of the 8<sup>th</sup> semester project (Project-phase-II), that the students had chosen as full project at the seventh semester level. The students must have completed a part of it, duly evaluated by the examination committee at the 7<sup>th</sup> semester level. The uptake of the project is subjected to the condition that the evaluation committee gives a nod for further uptake of the project. The deliverables include The working prototype of the project, Project Report and PPT presentation to be submitted at the end of the 8<sup>th</sup> semester.

3. The Remaining Part of the major Research based project (Project-phase-II) that the students had chosen as full project at the seventh semester level. The students must have completed a part of it, (as described in the project-Phase-I plan), duly evaluated by the examination committee at the 7<sup>th</sup> semester level. The uptake of the project is subjected to the condition that the evaluation committee gives a nod for further uptake of the project. The deliverables include: The working prototype of the project, Project Report and PPT presentation to be submitted at the end of the 8<sup>th</sup> semester.

**METHOD OF EVALUATION:**

The Project Phase-II will be evaluated at the end of the 8<sup>th</sup> Semester. The students need to present themselves before an examination committee (Internal + External) with the working prototype/Software of the project, The Thesis report and the power point presentation of the project.

The Evaluation committee must minimally comprise of the External Examiner, Head of the Department, Internal project guides and Project Faculty in-charge.

Course No.	Subject	Teaching Periods	Credits
		P	
PSIECE85	Professional Viva	0	1

**DESCRIPTION:**

A viva voce is an oral test, which literally translated means 'with the living voice'. It's a focused discussion giving you the opportunity to defend your Professional and Technical Abilities in front of a panel of academic experts. The Technical abilities include the core concepts and the skills gained by the student during the process of the four (4) Years of the Degree. While students need to be sure that this isn't a memory test, it is still important to gain a good understanding of the knowledge about your field of study. The professional abilities include the way a student presents himself in-front of an interview panel.

**METHOD OF EVALUATION:**

The Professional Viva is conducted at the end of the 8<sup>th</sup> Semester. The students need to present themselves before an examination committee (Internal + External) with professional/Formal attire. The evaluation committee evaluates the students on the basis of subjective knowledge and soft skills. The Evaluation committee must minimally comprise of the External Examiner, Head of the Department, Internal project guides and Faculty in-charge.



Course No.	Subject	Teaching Periods	Credits
		P	
PSIECE86	<b>Industrial Internship</b>	0	1

### DESCRIPTION:

Internships are educational and career development opportunities, providing practical experience in a field or discipline. They are structured, short-term, supervised placements often focused around particular tasks or projects with defined timescales. An internship may be compensated, non-compensated or some time may be paid. The internship

- Will expose Technical students to the industrial environment, which cannot be simulated in the classroom and hence creating competent professionals for the industry.
- Provide possible opportunities to learn, understand and sharpen the real time technical/managerial skills required at the job.
- Exposure to the current technological developments relevant to the subject area of training.
- Create conditions conducive to quest for knowledge and its applicability on the job.
- Learn to apply the Technical knowledge in real industrial situations.
- Gain experience in writing Technical reports/projects.
- Expose students to the engineer's responsibilities and ethics.

The Framework for Internship is as per AICTE Guidelines.

Schedule	Duration	Activities
During Vacation after 3rd Semester	4-6 weeks	Industrial/Govt./NGO/ MSME/ Rural Internship/ Innovation/ Entrepreneurship/ Private Enterprise/ Skill development Inst.
During Vacation after 5th Semester	4-6 weeks	Industrial/Govt./NGO/ MSME/ Rural Internship/ Innovation/ Entrepreneurship/ Private Enterprise/ Skill development Inst.
During Vacation after 7th Semester	4-6 weeks	Industrial/Govt./NGO/ MSME/ Rural Internship/ Innovation/ Entrepreneurship/ Private Enterprise/ Skill development Inst.

### EVALUATION:

**The student can go for more than one internship/ Skill development course in his/her curriculum. But for the necessary evaluation, the student needs to submit one of his/ her best Internship reports and certificates to the college. The evaluation will be done through Seminar Presentation/ Viva-Voce.**

The student will give a seminar based on his training report, before an expert committee constituted by the concerned department on the basis of:

1. Quality of content presented
2. Proper planning for presentation.
3. Effectiveness of presentation.
4. Depth of knowledge and skills.
5. Attendance record, daily diary.

The Evaluation committee must minimally comprise of the External Examiner, Head of the Department, Senior Faculty and T&P Faculty Incharge.