BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Pilani Campus
AUGS/ AGSR Division

SECOND SEMESTER 2019-20
COURSE HANDOUT

Date: 07.01.2020

In addition to part I (General Handout for all courses appended to the Time table) this portion gives further specific details regarding the course.

Course No : EEE G592
Course Title : Mobile and Personal Communication
Instructor-in-Charge : V K CHAUBEY
Tutorial/Practical Instructors: Rahul Sharma

1. Course Description: History of mobile radio; the mobile radio signal environment; review of statistical techniques; pathover flat as well as hilly terrain; effects of RF system design on propagation; received signal envelope and phase characteristics; modulation schemes employed; functional design of mobile radio systems, diversity schemes-space; frequency and polarization diversity; mobile radio system functional design; signal error analysis versus performance criteria; multiple access schemes; classification of the concepts of sensitive topics; new concepts data transmission via cellular; spectrum and technology of WLL.

2. Scope and Objective of the Course: The course aims at the study of mobile personal communications, one of the fastest growing fields in the engineering worldwide. Design methods and general concepts involved in understanding and implementation of wireless systems and techniques are discussed. In this course an effort will be made to impart an understanding of the basics of the rapidly growing field of mobile and personal communication systems, services and standards

3. Text Books: "Wireless Communications Principles and Practice" by Theodore S. Rappaport, Second Edition, Pearson Education Asia, 2002

4. Reference Books:

1. **"Mobile Communication Engineering" WCY lee, Mc-Graw-Hill, International Editions (1998).**
2. **Wireless Network Evolution: 2G to 3G, V K Garg, Pearson Education Asia, 2002**
3. **Wireless Communications & Networks, William Stallings, Pearson Education,Asia, 2002**

5. Course Plan:

Module No.	Lecture Session	Reference	Learning outcomes
1 (L1 & L2)	Introduction & General Overview	. Ch-1 (T1 ,R1)	Introduction to wireless communication and overview of mobile networks
2 (L3 & L4)	Modern wireless communication systems	Ch-2 (T1)	Mobile and wireless, Second Generation Networks

3(L5 - L8)	Cellular Design Concept	Ch-3 (T1)	Frequency Reuse, channel assignment & handoff strategies; interference and system capacity. Coverage improvement and system capacity.
4 (L9-L12)	Propagation Models	Ch-4 (T1) Ch-1 (R1)	Different channel models for mobile communication. Modes of propagation. Outdoor and Indoor propagation.
5 (L13-L18)	Multipath fading	Ch.5 (T1) Ch.3 (R1)	Small scale fading & Statistical models
6 (L19-L21)	Modulation Techniques	Ch.6 (T1)	AM, FM, Digital Modulation Schemes, GMSK, Spread Spectrum Modulation and Modulation Performance in Fading.
7 (L22-L25)	Equalization, Diversity and Channel Coding , Speech Coding	Ch-7, Ch.8 (T1	) Equalization in communication receivers, types, Diversity techniques and coding schemes for wireless systems
8(L26 - L30)	Multiple Access Techniques for Wireless	Ch.9 (T1) Ch.15 (R1)	FDMA, TDMA, CDMA and SDMA for wireless. Packet Radio, Capacity of Cellular Systems
9(L31-L34)	Wireless Networking	Ch-10 (T1)	Development of Wireless Networks, fixed network transmission hierarchy, circuit switching , packet switching, wireless data services, ISDN, SS7, PCS/ PCNs, protocols, UMTS etc.,
10 (L35-L38)	Wireless Systems and Standards	Ch-11 (T1) & Class notes	AMPS & ETACS, IS-54 , IS-136, GSM, CDMA (IS-95), PACS, PDC, PHS, PCS & ISM bands
11(L39-L41)	Wireless LANs, PANs and New Trends	Class discussions	IEEE 802.11 Wireless LANs, Bluetooth, WiMax and emerging trends

6. Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of component (Close Book/ Open Book)
Mid-Semester Test	90 Min.	30	02/03/2020	**Open Book**
Quiz (Surprize)		15		
Assignment/Lab		15		
Comprehensive Examination	3 h	40	02/05/2020	**Close Book/ Open Book**

7. Chamber Consultation Hour: To be notified

8. Notices: EEE NB & Nalanda

9. Make-up Policy: Make-up will be allowed for genuine cases. Prior application should be sent for seeking the same

10. Note (if any): --

Instructor-in-charge
Course No. EEE G592