

SWEDISH COLLEGE OF TECHNOLOGY
ELECTRICAL/ ELECTRONICS DEPT.

Course Code Telecommunication Systems & Applications (TL-424)

Credit Hours (Th-Pr) 3-1

Instructor Name Engr Ahmad Bilal

Course Website : ahmadbilal.webs.com

Contact ahamdbilal_21@hotmail.com

COURSE OBJECTIVES: Develop understanding of different systems used in Telecommunication

INTENDED COURSE OUTCOME: After the successful completion of this course the student will be familiar with Wireless networks and different modulation and multiplexing techniques that are used in wireless transmission ,.

RECOMMENDED TEXT BOOKS:

Wireless Communication by Rapport

Week	Description	Reference
Week 1	Introduction to medium. Wired and Wireless medium. Introduction to general wireless technologies. Need of modulation. Issues in wireless technologies and general concept of multiplexing	Class Handouts
Week 2	Introduction to PCS. Satellite system , WAN, PAN , Cordless phones, blue tooth , Sensor networks , adhoc networks	Chapter1 Rapport
Week 3	Introduction to evolution of 1G, 2G and 3G. Technological advancement in wireless system . Comparison of 1 G and 2 G. Introduction to GSM, AMPS, PAGING system and CDMA systems	Chapter1 Rapport
Week4	Introduction to cellular structure. Cell shape and Cell boundaries. Real lif life cells. Introduction to BSC, MSC , MS , types of MS. Half duplex, full duplex and simplex system. Channel used for wireless systems	Chapter2-3 Rapport
Week 5	Trunking and Gos . Improving Coverage capacity in cellular system. Micro Zone Cells, cell spitting , sectoring and repeaters	Chapter3 Rapport
Week 6	Mobile radio propagation . Free space propagation model. Relating Power to Electric Filed. Three basic Propagation Mechanism , Reflection , Models. Radar Cross Section	Chapter 4 : Rapport
Week 7	Introduction to Small scale Fading and Multi Path . Modulation Techniques for mobile radio, AM (Types of AM, AM Modulation Envelope Detection) , FM (Generation , method , and Detection) Digital modulation	Chapter 5/6: Rapport
Week 8	Introduction to Multiples Access Techniques. FDMA , TDMA, Spread Spectrum , SDMA ,Packet radio and Aloha	Chapter 9: Rapport
Week 9 - 11	GSM and its introduction , structure and working principal	Ericson Manul Rapport
Week 12-15	Radar.	

TL-424	Telecommunication Systems & Applications	3+1
Prerequisite: Analog and Digital Communication, Computer Communication Networks		
Objective: Develop understanding of different systems used in Telecommunication		
Course Outline: This course has been designed to be offered as an integrated course covering any two areas of Telecommunications, as required. Half a semester is devoted to each of the chosen areas. For example the two areas could be chosen from (a) Radio and Television Engineering (b) Optical Fiber communications (c) Satellite Systems (d) Spread Spectrum Systems (e) GSM based systems (f) CDMA based systems (g) Digital Radio (h) Signaling Systems in Telecom networks (e.g. CCS7) (i) Frame relay Network (j) ATM Network (k) Radar Systems The basic philosophy in choosing this course would be to fulfill the deficiency in the offered program in terms of market demand for particular operational knowledge within a specific area and where time and capacity is not available to deliver two separate courses. Simulation software including MATLAB, OPNET and EWB.		
Lab Outline: Following the theoretical outlines		
Recommended Books: <ul style="list-style-type: none"> • Introduction to Telecommunication by Freeman • Wireless Communication by Rapport 		