Course Outline

Week	
	Section I: Transmission Fundamentals
1	Decibel, telephone connection, speech transmission
2	Thermal noise, intermodulation, 1 dB compression, third-order intercept point, crosstalk
3	Signal to noise ratio, noise power ratio, noise figure, noise temperature, noise in cascaded components
4	AM to PM conversion, differential gain and differential phase, antenna gain, effective isotropic radiated power, G/T ratio, C/T ratio
	Section II: Wireless Links
5	Frequency assignment, frequency interference, Earth's bulge, Fresnel clearance, reflection points, free space path loss
6	Rainfall attenuation, FM receiver threshold, noise planning, multipath fading, fade margin, link reliability, diversity combiners, system configuration, preemphasis, deviation
7	Parabolic reflector, horn feed, and periscope antennas, single and double mirror passive reflectors, antenna towers, FM receivers, repeaters, hot standby operation, pilot tones, alarms and supervisor systems
	Section III: Fiber-Optic Links
8	Fiber structure, dispersion, loss, bandwidth-distance product, splices and connectors
9	Lasers, PIN diodes and APD's, modulation, fiber amplifiers, system design
	Section IV: Satellite Links
10	Earth Space window, transponder orbit, Earth station approval, illumination levels, station margin, up link calculation
11	Access schemes: FDMA, TDMA, satellite-switched TDMA, SCPC, television transmission, regional systems
12	Earth station systems, antenna tracking system, Earth station antennas, terrestrial link interface, co-ordination contour

ELEC 4509

Communications Links

Course Grading

The breakdown for the grades will be as follows:

Two term quizzes @20%	40%
Final Exam	60%

Reference Text

Freeman, Telecommunications Transmission Handbook, Wiley