

Course Code	ECE343		
Course Name	Mobile Communications		
Credits	4		
Course Offered to	UG/PG		
Course Description	The wireless telecommunications industry has grown tremendously since first cellular system was developed in 1983. Systems evolved from providing voice (2G) to all-IP data networks (4G), creating a need for researchers and engineers with knowledge about cellular radio systems and digital wireless communications techniques. Wireless systems that provide personal and M2M communications constitute a major research area of vital importance. The course will provide important knowledge to students who wish to work in wireless communications or wish to enter the telecommunications industry. The course is mainly focused at physical layer and includes fundamental theory, design trade-offs and practical issues of high capacity cellular communications systems. Trunking, RF propagation, frequency reuse, co channel interference management, hand-off, dropped calls and design of CDMA systems.		
Pre-requisites			
Pre-requisite (Mandatory)	Pre-requisite (Desirable)	Pre-requisite (Other)	
ECE240 Principles of Communication Systems	None		
*Please insert more rows if required			
Post Conditions*(For suggestions on verbs please refer the second sheet)			
CO1	CO2	CO3	CO4
Students are able to do of cellular radio system design and analyze the effects of large scale fading on cell coverage for signal and traffic	Students are able to analyse and implement techniques for co-channel and non co-channel interference reduction	Students are able to apply techniques to optimize hand-offs and dropped calls	Students are able to design a GSMCDMA system for the forward and reverse link in a realistic uniform capacity condition
Weekly Lecture Plan			
Week Number	Lecture Topic	COs Met	Assignment/Labs/Tutorial
Week 1,2	Introduction to Cellular Mobile System, Performance criteria Operation of cellular systems, Hexagonal shaped cells, Analog and Digital Cellular systems.		4 Assignments
Week 3-5	Mobile Radio propagation: Large scale path loss, Reflection, Diffraction, Scattering, Outdoor and Indoor propagation models,	C01	
Week 6-7	Cell coverage for signal and traffic: Signal reflections in flat and hilly terrain, effect of human made structures, phase difference between direct and reflected paths.	C01	
Week 8-9	Interference: Introduction to Co-Channel Interference, real time Co-Channel interference measurement, Different type of non co-channel interference	C02	
Week10	Frequency management and channel assignment: Numbering and grouping, setup access and paging channels channel assignments to cell sites and mobile units, Channel sharing and borrowing, sectorization, overlaid cells, non fixed channel assignment	C02	
Week 11-12	Hand Off, Dropped Calls: Why hand off, types of handoff and their characteristics, dropped call rates & their evaluation. Operational Techniques: Parameters, coverage hole filler, leaky feeders, cell splitting and small cells, narrow beam concept.	C03	
Week 13	Designing a CDMA system for the forward and reverse link in a realistic uniform capacity condition	C04	
Assessment Plan			
Type of Evaluation	% Contribution in Grade		
Mid-sem	20		
End-sem	40		
Project	20		
Assignment	10		
Quiz	10		
*Please insert more row for other type of Evaluation			
Resource Material			
Type	Title		
Textbook	Mobile Cellular Telecommunications: William C Y Lee,		
Textbook	Wireless Communication, Principles & Practice: T.S. Rappaport, PHI .		