FUTURE UNIVERSITY IN EGYPT جامعة المستقبل

Faculty of Engineering & Technology

Wireless Communication Networks

Information :

Course Code :	COM 583	**Level :**	Undergraduate	**Course Hours :**	3.00- Hours

Department : Specialization of Electronics & Communication

Area Of Study :

Provide students with a general understanding of the principles of modern cellular and wireless communication systems.
Provide students with the most recent digital communications techniques in the broad field of modern wireless communications systems.
Provide students with the necessary knowledge and skills to develop further understanding on the challenges and opportunities brought in designing current and future wireless communication systems and networks

Description :

Introduction to wireless systems and standards: cellular and wireless systems, multiple access techniques, cellular system design considerations. Brief review of fundamentals of radio propagation and channel models; error probability and outage probability in fading channels. Signal modulation: modulation schemes used in mobile systems, spectral characteristics, and error performance. Introduction to diversity combining: antenna diversity, multipath diversity, interleaving. Selected topics on modern wireless systems, including ultra wideband (UWB) Wi-Fi and WiMax.

Course outcomes :

a.Knowledge and Understanding: :	
1 -	Have a Knowledge of contemporary wireless communications issues.
2 -	Have a Conceptual understanding of the mathematics, statistics, and computer works.
3 -	Design and conduct experiments, as well as to analyze and interpret data.
b.Intellectual Skills: :	
1 -	Apply knowledge of mathematics, science and engineering.
2 -	Creative, innovative and pro-active demeanor.
3 -	Professional use and management of information
4 -	Fluent application of engineering techniques, tools and resources
c.Professional and Practical Skills: :	
1 -	Use the techniques, skills, and modern engineering tools necessary for engineering practice.
2 -	Understand of professional and ethical responsibility.
3 -	Apply of systematic engineering synthesis and design processes
4 -	Apply of established engineering methods to complex engineering problem solving.
d.General and Transferable Skills: :	
1 -	Collaborate effectively within multidisciplinary team

2 -	Communicate effectively.
3 -	Demonstrate efficient IT capabilities.
4 -	Effectively manage tasks, time, and resources.

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction to cellular and wireless system	5	3	2
Multiple Access Techniques	10	6	4
Wireless Channel Models	10	6	4
Digital Modulation Techniques over Wireless Channels	10	6	4
Multicarrier Modulation and OFDM	10	6	4
6 Diversity Techniques (Time, Frequency, Space, Multipath) over Wireless Channels	10	6	4
Channel Coding and Interleaving over Wireless Channels	10	6	4
Selected topics on modern wireless systems	10	6	4

Teaching And Learning Methodologies :

Interactive Lecturing
Discussion + Problem Solving
Laboratory

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
ÅFinal exam	40.00		
o Electronic and computer Lab Experiments	10.00		
o In Class Quizzes and participation	20.00		
o Mid-Term Exams	30.00		

Recommended books :

Andreas F. Molisch, Wireless Communications, 2nd ed., Wiley, 2011.
Theodore S. Rappaport, Wireless Communications: Principles and Practice. Prentice Hall, 2nd ed., 2002.
Andrea Goldsmith, Wireless Communications. Cambridge University Press, 2005