

**EC529 Modern Wireless Communications**

**COURSE INFORMATION**

Prerequisites	Academic Year & Level		Teaching Methods			Credit Hrs.
	Year	Semester	Lecture	Tutorial	Laboratory	
EC422 -	5	10	2	2	0	3

**COURSE AIM**

This course covers the fundamental issues impacting all wireless networks and reviews virtually most of the important new wireless standard and technological development, offering especially Comprehensive coverage of the spread spectrum multiple access techniques and its applications in 2G and 3G mobile systems and wireless local area networks (WLAN).

**COURSE WEEKLY CONTENTS**

- 1 Introduction to mobile and wireless systems.
- 2 Multipath propagation and radio capacity of cellular systems.
- 3 SC-FDMA systems
- 4 GSM and time division multiple access (TDMA) systems
- 5 Spreading sequences: Walsh orthogonal codes and PN codes
- 6 IS-95 forward link and reverse links
- 7 High speed packet access (HSPA) evolution and WCDMA+ Assessment
- 8 Frequency domain model of OFDM and channel estimation
- 9 WiMax frame structure , transmitter and receiver structures
- 10 MIMO, diversity, and beamforming in OFDM
- 11 Long term Evolution (LTE) physical layer
- 12 Assessment

**STUDENT GRADING & ASSESSMENT**

Weeks	Exams	Assign.	Quizzes	Reports	Present.	Lab.	Total
1 to 7	20 Midterm			5	5		30
8 to 12	10			5	5		20
13 to 15	←		10	MARKS		→	10
16 or 17	40 Final						40
<b>Total</b>	<b>Exams</b>	<b>Assign.</b>	<b>Quizzes</b>	<b>Reports</b>	<b>Present.</b>	<b>Lab.</b>	<b>100</b>

**REFERENCES**

**Textbook** • Theodore Rappaport, “Wireless Communications principles and practice”, Second Edition, Prentice Hall PTR, 2002

**Other**

- MATLAB “Simulink and Communications toolbox”