



## Course Syllabus

<b>Course ID</b>	0902513								
<b>Course Title</b>	Mobile Communications								
<b>Prerequisite</b>	0902401 Digital Communication								
<b>Time &amp; Date</b>									
<b>Coordinator</b>	-								
<b>Instructor</b>	Dr. Faculty of Engineering E-mail: Telephone: ext.								
<b>Office hours</b>	Tue 8:30 – 11:30am & SunTueThu 9:00-10:00 am								
<b>Course Description</b>	Introduction. Mobile radio environment. Short term fading. Long term fading. Models and prediction of the median path loss. Coverage principles. Multi channel and co channel schemes. Quasi-synchronous transmission. Cellular concept and frequency reuse. Interference. Adjacent channel. Co channel and inter modulation. Modulation techniques. Mobile communication systems. Analog and digital cellular phone.(TACS, ANPS, GSM, and ADC), private and public access mobile radio and radio paging								
<b>Course Objectives</b>	<ol style="list-style-type: none"><li>1. Understand and apply cellular systems design fundamentals.</li><li>2. Ability to analyze and design cellular systems in the physical layer</li><li>3. Understand and apply characterization of wireless channels.</li><li>4. Ability to analyze wireless channel parameters and relate them to wireless systems.</li><li>5. Ability to analyze the performance of digital modulation techniques over wireless channels</li><li>6. Understand and apply multiple access techniques for mobile systems.</li><li>7. Understand mobile systems and standard</li></ol>								
<b>Course Outcomes</b>	<table><tr><td>(a) An ability to apply knowledge of mathematics, science, and</td><td>(e) An ability to identify, and solve engineering problems</td></tr><tr><td>(b) An ability to design and conduct experiments, to analyze and data</td><td>(f) An understanding of ethical responsibility</td></tr><tr><td>(c) An ability to design a system, component, process to meet needs</td><td>(g) An ability to communicate</td></tr><tr><td>(d) An ability to function on multi-disciplinary teams</td><td>(h) The broad education necessary understand the impact of solutions in a global and context</td></tr></table>	(a) An ability to apply knowledge of mathematics, science, and	(e) An ability to identify, and solve engineering problems	(b) An ability to design and conduct experiments, to analyze and data	(f) An understanding of ethical responsibility	(c) An ability to design a system, component, process to meet needs	(g) An ability to communicate	(d) An ability to function on multi-disciplinary teams	(h) The broad education necessary understand the impact of solutions in a global and context
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<b>Course Topics</b>	<p>After successfully completing this course, the students should be able to:</p> <p>1. Introduction to Wireless systems: 3 Hours communication</p> <p>2. Cellular Systems Design 11 Hours Fundamentals:</p> <p>3. Mobile Radio Propagation, Fading and Modulation techniques for mobile 11 Hours Multipart.</p> <p>4. Diversity techniques for mobile radio 6 Hours radio systems.</p> <p>5. Multiple access techniques for mobile 3 Hours systems.</p> <p>7- Mobile Systems and Standards. 9 Hours</p> <p>Computer Usage Matlab Simulation</p>
<b>Course Text Book</b>	Theodore S. Rappaport, Wireless Communications: Principles and Practice, Second Edition, New Jersey: Prentice-Hall, 2002. + Lecture Notes.
<b>Course References</b>	<p>1) K. Wesolowski, Mobile Communication Systems, New York: John Wiley &amp; Sons, ILTD, 2004.</p> <p>2) P. Shankar, Introduction to Wireless Systems, New York: John Wiley &amp; Sons, INC, 2002.</p> <p>3) W. C. Y. Lee, Mobile Cellular Telecommunications- Analog and Digital systems, Second Edition, New York: McGraw-Hill, 1995.</p> <p>4) W. C. Y. Lee, Mobile Communications Design Fundamentals, Second Edition, New York: John Wiley &amp; Sons, INC, 1993.</p> <p>5) W. C. Y. Lee, Mobile Communication Engineering, McGraw-Hill, 1982.</p> <p>J. G. Proakis, Digital Communications, McGraw-Hill, 1995.</p>
<b>Course delivery</b>	<p>Lectures</p> <p>Tutorial</p> <p>Lab</p> <p>Homework</p> <p>Project</p> <p>Computer</p> <p>Internet</p> <p>Industrial Visit</p>
<b>Course Assessment</b>	<p>Assignments &amp; short reports..... 10%</p> <p>2 exams @ 20% each ..... 40%</p> <p>Final exam ..... 50%</p>
<b>Updated</b>	<b>Dr. Takialddin AL-Smadi 10/2009</b>

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO12
CO1											
CO2											
CO3											
CO4											
CO5											
CO6											
CO7											
CO8											
CO9											

	a	b	C	D	e	f	g	h	i	j	K
CO1											
CO2											
CO3											
CO4											
CO5											
CO6											
CO7											
CO8											
CO9											

### **ABET a-k Engineering and Technology program outcome**

- (a) An ability to apply knowledge of mathematics, science, and engineering
- (b) An ability to design and conduct experiments, to analyze and interpret data
- (c) An ability to design a system, component, or process to meet desired needs
- (d) An ability to function on multi-disciplinary teams
- (e) An ability to identify, formulate, and solve engineering problems
- (f) An understanding of professional and ethical responsibility
- (g) An ability to communicate effectively
- (h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
- (i) A recognition of the need for, and an ability to engage in life-long learning
- (j) A knowledge of contemporary issues
- (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

### **Plagiarism**

Deliberate plagiarism is a serious act of academic misconduct. Students may be suspended from the University if they are found to have plagiarized their course work. Whether inadvertent or deliberate, plagiarism includes the following:

- (a) word-for-word copying of sentences or whole paragraphs or presenting of substantial extracts from either paper-based or electronic sources the work or data of others that are published or unpublished (such as books, internal reports, and lecture notes or tapes) without clearly indicating their origin;

- (b) using very close paraphrasing of sentences or whole paragraphs without due acknowledgement in the form of reference to the original work;
- (c) submitting another student's work in whole or in part;
- (d) using of another person's ideas, work or research data without acknowledgement;
- (e) copying computer files, algorithms or computer code without clearly indicating their origin;
- (f) submitting work that has been written by someone else on the student's behalf; and
- (g) submitting work that has been derived, in whole or in part, from another student's work by a process of mechanical transformation (e.g., changing variable names in computer programs).