

University : Menoufiya University

College : Faculty of Electronic Engineering

Department : Electronics and electrical communication engineering

## Course Specification

1- Course basic information :		
<b>Course Code: EC 424</b>	<b>Course Title:</b> <b>Antennas Engineering</b>	<b>Academic year: 2012/2013</b> <b>Level ( ٤ ) – Semester : ١</b>
<b>Department requirement</b>	<b>Teaching hours: Lecture</b> <input type="text" value="٣"/> <b>Tutorial</b> <input type="text" value="٢"/> <b>Lab</b> <input type="text" value="٠"/>	

<b>2- Aim of the course</b>	<ul style="list-style-type: none"><li>• Knowing the different types of antennas</li><li>• Understanding the different analysis methods of antennas</li><li>• Understanding the ground wave propagation mechanisms.</li></ul>
3- Intended Learning Outcomes:	
<b>A- Knowledge and Understanding:</b>	A1) Concepts and theories of mathematics and sciences, appropriate to the antennas. a3) Characteristics of engineering materials related to the antennas. a4) Principles of design including elements design, process and/or a system related to specific antennas. a8) Current engineering technologies as related to antennas. a20) Antenna and wave propagation.
<b>B- Intellectual Skills</b>	b1) Select appropriate mathematical and computer-based methods for modeling and analyzing problems. b2) Select appropriate solutions for engineering problems based on analytical thinking. b6) Investigate the failure of components, systems, and processes. b11) Analyze results of numerical models and assess their limitations. b16) Synthesis and integrate electronic systems for certain specific function using the right equipment.



<b>c- Weighting of Assessment</b>	<ul style="list-style-type: none"> <li>- Class tutorial and quizzes : 5 %</li> <li>- Mid-term examination: 15 %</li> <li>- Case study and/or practical exam: 5 %</li> <li>- Final – term examination: 70 %</li> <li>- Other types of assessment: 5 %</li> </ul> <p style="text-align: right;"><b>Total 100 %</b></p>
<b>8- List of text books and references:</b>	
<b>a- Course notes</b>	There are lectures notes prepared in the form of a book authorized by the department
<b>b- Text books</b>	<ol style="list-style-type: none"> <li>1. C. A. Balanis, "Antenna Theory: A Review," <i>Proc. IEEE</i>, Vol. 80, No. 1, pp. 7–23, January 1992.</li> <li>2. L. V. Blake, <i>Antennas</i>, Wiley, New York, 1966, p. 289.</li> <li>3. C. A. Balanis, <i>Advanced Engineering Electromagnetics</i>, Wiley, New York, 1989</li> </ol>
<b>c- Recommended books</b>	<ol style="list-style-type: none"> <li>1. Z.N. Chen, <i>Antennas for portable devices</i>, Wiley &amp; Sons, Inc., England, 2007</li> <li>2. J. D. Kraus, <i>Antennas</i>, McGraw-Hill, New York, 1988.</li> <li>3. J. D. Kraus, <i>Electromagnetics</i>, McGraw-Hill, New York, 1992, pp. 761–763.</li> <li>4. S. A. Schelkunoff and H. T. Friis, <i>Antenna Theory and Practice</i>, Wiley, New York, 1952</li> </ol>
<b>d- Periodicals, Web sites .....etc</b>	IEEE Transactions

### Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Linear Antenna- Arrays of Elements	1-3	A1,a3	B1,b2	C1,c2	D3
Aperture Antenna	4-5	A4,a8	B6,b11	C1,c6	D1
Microstrip Antennas	6-7	A8,a20	B2,b6	C2,c7	D3,d7
Smart Antenna	9-10	A1,a3,a4	B11,b16	C7,c17	D9

Receiving Antennas	11	A1,a4	B6	C1,c2	D1,d7
Ground wave Propagation	12-13	A1,a8,a20	B6,b11	C1,c2,c17	D1,d7,d9
Space wave Propagation-Sky wave Propagation.	14	A8	B6,b11	C1,c2	D9

**Course coordinator:**

**Head of Department:**

**Date:** / /