

University : Menoufiya University

College : Faculty of Electronic Engineering

Department : Electronics and electrical communication engineering

### Course Specification

1- Course basic information :		
<b>Course Code: EC 322</b>	<b>Course Title:</b> Electromagnetic Theory	<b>Academic year: 2012/2013</b> <b>Level ( 3 ) – Semester : 1</b>
<b>Department requirement</b>	<b>Teaching hours: Lecture</b> <input type="text" value="3"/> <b>Tutorial</b> <input type="text" value="2"/> <b>Lab</b> <input type="text" value="0"/>	

<b>2- Aim of the course</b>	<ul style="list-style-type: none"><li>• To introduce the students to the fundamentals of E.M. waves.</li><li>• To understand the main characteristics of the waves propagation.</li><li>• To understand the main parameters and characteristics of T.L and Wave Guides.</li></ul>
3- Intended Learning Outcomes:	
<b>A- Knowledge and Understanding:</b>	<ul style="list-style-type: none"><li>• a1) Concepts and theories of mathematics and sciences, appropriate to the Electromagnetic Theory.</li><li>• a3) Characteristics of engineering materials related to the Electromagnetic Theory.</li><li>• a4) Principles of design including elements design, process and/or a system related to specific Electromagnetic Theory.<ul style="list-style-type: none"><li>• a20) Antenna and wave propagation.</li><li>• a23) Microwave applications.</li></ul></li></ul>
<b>B- Intellectual Skills</b>	<ul style="list-style-type: none"><li>• b2) Select appropriate solutions for engineering problems based on analytical thinking.</li><li>• b5) Assess and evaluate the characteristics and performance of components, systems and processes.</li><li>• b11) Analyze results of numerical models and assess their limitations.</li></ul>
<b>C- Professional Skills</b>	<ul style="list-style-type: none"><li>• c2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services.</li><li>• c6) Use a wide range of analytical tools, and techniques, equipment, pertaining to the Electromagnetic Theory.<ul style="list-style-type: none"><li>• c7) Apply numerical modeling methods to engineering problems.</li></ul></li></ul>

<b>D- General Skills</b>	<ul style="list-style-type: none"> <li>• d1) Collaborate effectively within multidisciplinary team.</li> <li>• d7) Search for information and engage in life-long self learning Electromagnetic Theory.</li> <li>d9) Refer to relevant literatures.</li> </ul>
<b>4- Course Contents</b>	<ul style="list-style-type: none"> <li>• Vector analysis, electrostatic fields, magneto static fields, time-varying fields ,Plane Wave propagation, Transmission line Theory.</li> </ul>
<b>5- Teaching and Learning Methods</b>	<ul style="list-style-type: none"> <li>- <b>Lectures</b></li> <li>- <b>Tutorials</b></li> <li>- <b>Labs and/or case studies</b></li> <li>- <b>Research assignments</b></li> </ul>
<b>6- Teaching and Learning Methods for disable students</b>	NA
<b>7- Student Assessment</b>	
<b>a- Assessment Methods</b>	<ul style="list-style-type: none"> <li>- Weekly sheet exercises at class room</li> <li>- Quizzes</li> <li>- Labs and/or case study for more demonstration.</li> <li>- Mid term, and final exams</li> </ul>
<b>b- Assessment Schedule</b>	<ul style="list-style-type: none"> <li>- Exercise sheet/ Lab assignment : <b>Weekly</b></li> <li>- Quiz-1: <b>Week <u>no</u> 4</b></li> <li>- Mid-Term exam: <b>Week <u>no</u> 8</b></li> <li>- Quiz-2: <b>Week <u>no</u> 12</b></li> <li>- Lab exam: <b>Week <u>no</u> 15</b></li> <li>- Final – term examination: <b>Week <u>no</u> 16</b></li> </ul>
<b>c- Weighting of Assessment</b>	<ul style="list-style-type: none"> <li>- Class tutorial and quizzes : 15 %</li> <li>- Mid-term examination: 15 %</li> <li>- Final – term examination: 70 %</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>	<ul style="list-style-type: none"> <li>[1] Introduction to Electromagnetic Fields, by: C.R.Paul and Syed A.Nasar.</li> <li>[2] Electromagnetic Waves and Radiating Systems, by: E.C.Jordan and K.Balmain.</li> <li>[3] Fields, Waves and Transmission Lines, by: F.A.Benson and T.M.Benson</li> </ul>
<b>c- Recommended</b>	[1]Foundations for microstrip circuit design, by: T.C.Edwards.

<b>books</b>	[2] Microwave Engineering, by: D.Pozar.
<b>d- Periodicals, Web sites .....etc</b>	<b>IEEE periodicals</b>

**Course contents - ILOs Matrix**

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Vector analysis, electrostatic fields	1-3	a1, a4,a23	b2, b3	c2	d1
Transmission line at UHF- Plane wave propagation	4-7	a3, a4,a20	b5, b11	c6,c7	d7
Rectangular and circular Guides	9-11	a3, a4,a23	b2	c6,c7	d1, d9
Microstrip Lines	12-14	a1, a4	b5,b11	c2,c6	d7, d9

**Course coordinator:**

**Head of Department:**

**Date:** / /