



**University/Academy:** Arab Academy for Science, Technology & Maritime Transport  
**Faculty/Institute:** College of Engineering & Technology  
**Program:** Mechanical/Construction/Marine Engineering

**Form no. (12)**  
**Course Specification**

**1- Course Data**

<b>Course Code:</b> EE 238	<b>Course Title:</b> Electrical Engineering Fundamentals	<b>Academic Year/Level:</b> 2
<b>Specialization:</b> Mechanical , Construction and Marine Eng.	<b>No. of Instructional Units:</b> 3	<b>Lecture</b> 2 <b>tutorial</b> 2

<b>2- Course Aim</b>	- Providing detailed skills related to the basic circuit, circuit theorems , the laws of magnetic force , and alternating current
----------------------	---

<b>3- Intended Learning Outcome</b>
-------------------------------------

<b>a- Knowledge and Understanding</b>	<ul style="list-style-type: none"><li>- Electrical circuit elements.</li><li>- Definition of Ohm's law and Kirchoff's laws.</li><li>- Identification between concepts of series and parallel circuits.</li><li>- Distinguishing electrical network theorems.</li><li>- Knowing magnetic field and magnetic circuits.</li><li>- Associating phasor diagram representation.</li><li>- Definitions and calculations of average and effective waveform values.</li><li>- Collecting principles of RLC circuits.</li></ul>
---------------------------------------	---

<b>b- Intellectual Skills</b>	<ul style="list-style-type: none"> <li>- Ability to:</li> <li>- Select appropriate methods to analyze and solve DC electrical circuits.</li> <li>- Apply mathematical, graphical and numerical techniques for solving electric circuit's problems in steady stat and transient cases.</li> </ul>
<b>c- Professional Skills</b>	<ul style="list-style-type: none"> <li>- Ability to:</li> <li>- Perform laboratory experiments to verify various electric circuits theories and laws.</li> <li>- Use computers in solving basic electrical circuits.</li> </ul>
<b>d- General Skills</b>	<ul style="list-style-type: none"> <li>-Ability to:</li> <li>-Work in a small group to perform basic electrical engineering experiments and exercises.</li> <li>-Prepare reports and present data on electrical engineering.</li> </ul>
<b>4- Course Content</b>	<p><i>Week Number 1:</i> Introduction</p> <p><i>Week Number 2:</i> Basic circuit</p> <p><i>Week Number 3:</i> Resistance, voltage, current, and ohm's law.</p> <p><i>Week Number 4:</i> Kirchoff's laws.</p> <p><i>Week Number 5:</i> Resistances in series or parallel.</p> <p><i>Week Number 6:</i> Mesh analysis</p> <p><i>Week Number 7:</i> 7th week exam + Node analysis</p> <p><i>Week Number 8:</i> Source transformation</p> <p><i>Week Number 9:</i> Superposition, voltage and current divider</p> <p><i>Week Number 10:</i> Laws of magnetic force</p> <p><i>Week Number 11:</i> Field strength, flux density.</p> <p><i>Week Number 12:</i> 12th week exam + Relation between B, H, I, K</p> <p><i>Week Number 13:</i> Alternating current.</p>

	<p><i>Week Number 14:</i> Waves, effective value.</p> <p><i>Week Number 15:</i> Power.</p> <p>Final exam</p>
<b>5- Teaching and Learning Methods</b>	<p>-Lectures</p> <p>-Tutorials</p>
<b>6- Teaching and Learning Methods for Students with Special Needs</b>	<p>- Lectures</p> <p>- Tutorials</p> <p>- Reports &amp; sheets</p> <p>- Laboratories</p>
<b>7- Student Assessment:</b>	<p>Quiz evaluation                      to asses part of the 7<sup>th</sup> week</p> <p>Quiz evaluation                      to asses part of the 7<sup>th</sup> week</p> <p>Report evaluation                      to asses 7<sup>th</sup> week practical</p> <p>Written exam                      to asses the mid-term exam</p> <p>Quiz evaluation                      to asses part of the 12<sup>th</sup> week</p> <p>Written exam evaluation                      to asses the 12<sup>th</sup> week</p>
<b>a- Procedures used:</b>	<p>Written Examinations to asses The Intended Learning Outcomes</p> <p>Class Activities (Reports, Discussions, -----) to asses The Intellectual Skills</p>
<b>b- Schedule:</b>	<p>Assessment 1                      3<sup>rd</sup> Week</p> <p>Assessment 2                      5<sup>th</sup> Week</p> <p>Assessment 3                      7<sup>th</sup> Week</p> <p>Assessment 4                      10<sup>th</sup> Week</p> <p>Assessment 4                      12<sup>th</sup> Week</p> <p>Assessment 5                      13<sup>th</sup> Week</p>
<b>c- Weighing of Assessment:</b>	<p>7<sup>th</sup> Week Examination                      30%</p> <p>12<sup>th</sup> Week Examination                      20%</p> <p>Final-term Examination                      40%</p> <p>Practical Examination                      10%</p>

	<b>Total</b>	<b>100%</b>
<b>8- List of References:</b>	<ul style="list-style-type: none"> <li>▪ A. B Carlson, “Circuits, Engineering Concepts and Analysis of Linear Electric Circuits”, John Wiley, 2000</li> <li>▪ R.L. Boylestad, “Introductory Circuit Analysis”, Merrill, London, 1994.</li> <li>▪ W. J. Hayt and J. E. Kemmerly, “Engineering Circuit Analysis”, McGraw Hill Int. Edition, 1986.</li> <li>▪ D. E. Johnson, J. R. Johnson and J.L. Hilburn, “Electric Circuit Analysis”, Prentice Hall, N. J. 1992.</li> </ul> <p>course objectives</p>	
<b>a- Course Notes</b>		
<b>b- Required Books (Textbooks)</b>	J. Nilsson & S. Riedel, “Electrical circuits”, Prentice Hall, latest edition	
<b>c- Recommended Books</b>		
<b>d- Periodicals, Web Sites, ..., etc.</b>		

**Course Instructor:**

**Head of Department:**

**Program Manager:**