



**University/Academy:** Arab Academy for Science and Technology & Maritime Transport  
**Faculty/Institute:** College of Engineering & Technology  
**Program:** Electrical and Control Engineering

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

**1- Course Data**

<b>Course Code:</b> EE 423	<b>Course Title:</b> Power Electronics (2)	<b>Academic Year/Level:</b> 4
<b>Specialization:</b> Electrical and Control Eng.	<b>No. of Instructional Units:</b> 3	<b>Lecture</b> 2 <b>Tutorial / Practical</b> 2

<b>2- Course Aim</b>	<ul style="list-style-type: none"><li>• Providing detailed skills related to subject of D.C choppers DC-AC inverters.</li><li>• To investigate the different aspects of DC choppers.</li><li>• To study the kinds , circuit and application of inverters</li></ul>
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<b>3- Intended Learning Outcome</b>	
<b>a- Knowledge and Understanding</b>	A.4 Principles of design including elements design, process and/or a system related to specific disciplines A.8 Current engineering technologies as related to disciplines A.12 Contemporary engineering topics A.29 Understand the principle and design of power electronic and drive system

<b>b- Intellectual Skills</b>	B.11 Analyze results of numerical models and assess their limitations
<b>c- Professional Skills</b>	<p>C.5 Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results</p> <p>C.6 Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs</p>
<b>d- General Skills</b>	<p>D.1 Collaborate effectively within multidisciplinary team</p> <p>D.3 Communicate effectively</p> <p>D.8 Acquire entrepreneurial skills</p> <p>D.10 Design and prepare presentation quality visual aids</p>

<b>4- Course Content</b> According to Course Matrix ( <b>Form 11a</b> ), Course File Summary ( <b>ISO MPC 3/2-1</b> and session Plan ( <b>ISO MPC 3/3-1</b> )	<i>Week Number 1:</i> The Mosfet Power Transistor <i>Week Number 2:</i> Chopper principles and classification <i>Week Number 3:</i> The Buck, the boost regulators <i>Week Number 4:</i> The Buck-Boost and the cuk regulators <i>Week Number 5:</i> Single phase AC Voltage controllers principles <i>Week Number 6:</i> Single Phase full wave AC voltage controllers <i>Week Number 7:</i> Three phase half wave AC voltage controllers <i>Week Number 8:</i> Three phase full wave AC voltage controllers <i>Week Number 9:</i> Cycloconverters <i>Week Number 10:</i> Principles and performance of PWM inverters <i>Week Number 11:</i> Three Phase inverters <i>Week Number 12:</i> Voltage control inverters <i>Week Number 13:</i> Other kinds of inverters <i>Week Number 14:</i> Applications <i>Week Number 15:</i> Applications (continued) <i>Week Number 16:</i> Final exam												
<b>5- Teaching and Learning Methods</b>	<ul style="list-style-type: none"> <li>- Lectures</li> <li>- Tutorials</li> <li>- Reports &amp; sheets</li> <li>- Laboratories</li> </ul>												
<b>6- Teaching and Learning Methods for Students with Special Needs</b>	<ul style="list-style-type: none"> <li>- Lectures</li> <li>- Tutorials</li> <li>- Reports &amp; sheets</li> <li>- Laboratories</li> <li>- Condensed office hours</li> </ul>												
<b>7- Student Assessment:</b>	Written Examinations to assess The Intended Learning Outcomes Class Activities (Reports, Discussions, -----) to assess the Intellectual Skills												
<b>a- Procedures used:</b>	Written Examinations to asses The Intended Learning Outcomes Class Activities (Reports, Discussions, -----) to assess the Intellectual Skills												
<b>b- Schedule:</b>	<table border="0" style="width: 100%;"> <tr> <td style="width: 60%;">Assessment 1</td> <td>7<sup>th</sup> Week Written Exam</td> </tr> <tr> <td>Assessment 2</td> <td>12<sup>th</sup> Week Written Exam</td> </tr> <tr> <td>Assessment 3</td> <td>Continuous Assessments</td> </tr> <tr> <td>Assessment 4</td> <td>16<sup>th</sup> Week Final Written Exam</td> </tr> </table>	Assessment 1	7 <sup>th</sup> Week Written Exam	Assessment 2	12 <sup>th</sup> Week Written Exam	Assessment 3	Continuous Assessments	Assessment 4	16 <sup>th</sup> Week Final Written Exam				
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<b>8- List of References:</b>	P. C. Sen, "Principles of Electrical Machines abd Power Electronics", John Wiely												

<b>a- Course Notes</b>	
<b>b- Required Books (Textbooks)</b>	M. H. Rashid, "Power Electronics: Circuits, Devices and Applications", Prentice Hall
<b>c- Recommended Books</b>	
<b>d- Periodicals, Web Sites, ..., etc.</b>	

**Course Instructor**

Name: **Prof. Hamdy Ashour**

Signature:

**Head of Department**

Name: **Prof. Hamdy Ashour**

Signature:

**Dean of College of Engineering and Technology of AASTMT**

Name: **Prof. Moustafa Hussein Aly**

Signature:

**Executive Manager of Quality Assurance Center of AASTMT**

Name: **Prof. Aziz Ezzat**

Signature: