



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

Course Code: EE 513	Course Title: Control Application in Power Engineering	Academic Year/Level: 5/9
Specialization: Electrical and Control Engineering	No. of Instructional Units: 3	Lecture <input type="text" value="2"/> Tutorial/Practical <input type="text" value="2"/>

2- Course Aim	Providing detailed skills related to the subject of control problems and their application in power system engineering.
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3- Intended Learning Outcome

a- Knowledge and Understanding	A.4. Principles of design including elements design, process and/or a system related to specific disciplines A.12 Contemporary engineering topics A.15. Principles of operation and performance specifications of electrical and electromechanical engineering systems A.27. Analysis, design and implementation of various methods of control using analogue and digital control systems A.28. Applications of industrial automated systems for electrical and control engineering A.31. Formulate the problem, realizing the requirements and identifying the constraints
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<p>b- Intellectual Skills</p>	<p>B.1. Select appropriate mathematical and computer-based methods for modeling and analyzing problems</p> <p>B.2. Select appropriate solutions for engineering problems based on analytical thinking</p> <p>B.3. Think in a creative and innovative way in problem solving and design</p> <p>B.7. Solve engineering problems, often on the basis of limited and possibly contradicting information</p> <p>B.8. Select and appraise appropriate ICT tools to a variety of engineering problems</p> <p>B.13. Identify and formulate engineering problems to solve problems in the field of electrical power and machines engineering.</p> <p>B.14. Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines.</p> <p>B.15. Integrate electrical, electronic and mechanical components and equipment with transducers, actuators and controllers in creatively computer controlled systems.</p> <p>B.16. Analyze the performance of electric power generation, control and distribution systems</p> <p>B.17. Analyze power system behavior and suggest appropriate protection scheme</p> <p>B.19. Design computer programs to analyze and simulate different electrical systems components and control applications</p>
<p>c- Professional Skills</p>	<p>C.3 Create and/or re-design a process, components or system, and carry out specialized engineering designs</p> <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> <p>C.16. Specify and evaluate manufacturing of components and equipment related to electrical power and machines</p> <p>C.17. Apply modern techniques, skills and engineering tools to electrical power and machines engineering systems</p>

d- General Skills	<p>D.1 Collaborate effectively within multidisciplinary team</p> <p>D.3. Communicate effectively</p> <p>D.4 Demonstrate efficient IT capabilities - Use efficient simulation software such as Matlab</p> <p>D.5 Lead and motivate individuals</p> <p>D.7 Search for information and engage in life-long self learning discipline</p> <p>D.9 Refer to relevant literature</p>
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4- Course Content According to Course Matrix (Form 11a), Course File Summary (ISO MPC 3/2-1 and session Plan (ISO MPC 3/3-1))	<p><i>Week Number 1:</i> Control problems in electrical power system – An introduction.</p> <p><i>Week Number 2:</i> Control problems in electrical power system – An introduction.</p> <p><i>Week Number 3:</i> Modeling System Components in power system Dynamics.</p> <p><i>Week Number 4:</i> Modeling System Components in power system Dynamics.</p> <p><i>Week Number 5:</i> Modeling System Components in power system Dynamics.</p> <p><i>Week Number 6:</i> Modeling System Components in power system Dynamics.</p> <p><i>Week Number 7:</i> 7th week exam + Excitation control Systems-QV control.</p> <p><i>Week Number 8:</i> Excitation control Systems-QV control Channel.</p> <p><i>Week Number 9:</i> Excitation control Systems-QV control Channel.</p> <p><i>Week Number 10:</i> Excitation control Systems-QV control Channel.</p> <p><i>Week Number 11:</i> Generation control systems-PF control Channel.</p> <p><i>Week Number 12:</i> 12th week exam + Generation control systems-PF control Channel.</p> <p><i>Week Number 13:</i> Generation control systems-PF control Channel.</p> <p><i>Week Number 14:</i> Generation control systems-PF control Channel.</p> <p><i>Week Number 15:</i> Generation control systems-PF control Channel.</p> <p><i>Week Number 16:</i> Final Exam.</p>
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5- Teaching and Learning Methods	<ul style="list-style-type: none"> - Lectures - Tutorials - Discussion papers - Focus Group - Practical training
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6- Teaching and Learning Methods for Students with Special Needs	<ul style="list-style-type: none"> - Lectures - Tutorials - Discussion papers - Focus Group - in addition to extra Lectures and Tutorials - Condensed office hours -Practical training
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7- Student Assessment:	
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a- Procedures used:	Quizzes to assess part of the 7 th week evaluation Report to assess partials of the 7 th week evaluation Quizzes Written exam to assess part of the 12 th Reports to assess the semester work and practical evaluation Written exam to assess the final exam evaluation
b- Schedule:	Assessment 1 (Quiz) 5 th Week Assessment 2 (Quiz) 7 th Week Assessment 3 (Reports) 7 th Week Assessment 4 (Quiz) 10 th Week Assessment 5 (Quiz) 12 th Week Assessment 5 (Reports) 15 th Week
c- Weighing of Assessment:	7 th Week Examination 30% 12 th Week Examination 15%+5% Final-term Examination 40% Oral Examination 0% Semester Work 10% Total 100%
8- List of References:	P.M Anderson, and A.A. Fouad " Power System Control and Stability", Iowa State University Press, U.S.A, 1977
a- Course Notes	
b- Required Books (Textbooks)	Dr. Mahmoud El-Gammal, "Control Application in Power Engineering", Arab Academy for Science & Technology publication
c- Recommended Books	
d- Periodicals, Web Sites, ..., etc.	

Course Instructor

Name: **Dr. Mostafa Abdelgeil**

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**

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