



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

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

1- Course Data

Course Code: EE 442	Course Title: Power System Protection I	Academic Year/Level: 4
Specialization: Electrical & Control Engineering	No. of Instructional Units: 3	Lecture 2 Tutorial 2

2- Course Aim	- To enable the students understanding the concepts of protection of electrical equipment, advantages and disadvantages of protection techniques through coverage of principles of operation of the different types of relays, circuit breakers and fuses in power system protection and the appropriate circuit for the protection of the various components of power system.
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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.6 Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues. A.8 Current engineering technologies as related to disciplines A.11 Professional ethics and impacts of engineering solutions on society and environment

b- Intellectual Skills	B.3 Think in a creative and innovative way in problem solving and design B.6 Investigate the failure of components, systems, and processes B.9 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact B.17 Analyze power system behavior and suggest appropriate
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	protection scheme
c- Professional Skills	<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.13 Design and perform experiments, as well as analyze and interpret experimental results related to electrical power and machines systems</p>
d- General Skills	<p>D.3 Communicate effectively</p> <p>D.4 Demonstrate efficient IT capabilities</p>
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> General principles of protection</p> <p><i>Week Number 2:</i> Types of Relays and construction of over current relays</p> <p><i>Week Number 3:</i> Instrument Transformers</p> <p><i>Week Number 4:</i> Fuses</p> <p><i>Week Number 5:</i> Circuit Breakers (1)</p> <p><i>Week Number 6:</i> Circuit Breakers (2)</p> <p><i>Week Number 7:</i> Over current relays' settings</p> <p><i>Week Number 8:</i> Transmission Line Protection (1).</p> <p><i>Week Number 9:</i> Transmission Line Protection (2)</p> <p><i>Week Number 10:</i> Differential Protection</p> <p><i>Week Number 11:</i> Protection of transformers (1)</p> <p><i>Week Number 12:</i> Protection of transformers (2)</p> <p><i>Week Number 13:</i> Protection of Motors</p> <p><i>Week Number 14:</i> Generator Protection</p> <p><i>Week Number 15:</i> General revision</p> <p><i>Week Number 16:</i> Final Exam</p>
5- Teaching and Learning Methods	<ul style="list-style-type: none"> - Lectures - Tutorials - Reports & sheets - Laboratories - Seminars
6- Teaching and Learning Methods for Students with Special Needs	<ul style="list-style-type: none"> - Lectures - Tutorials - Reports & sheets - Laboratories - Seminars - Condensed Office hours
7- Student Assessment:	<p>Written Examinations to asses The Intended Learning Outcomes</p> <p>Class Activities (Reports, Discussions, -----) to asses The Intellectual Skills</p>
a- Procedures used:	<p>Written Examinations to asses The Intended Learning Outcomes</p> <p>Class Activities (Reports, Discussions, -----) to asses The Intellectual Skills</p>

b- Schedule:	Assessment 1	7 th Week Written Exam
	Assessment 2	12 th Week Written Exam
	Assessment 3	Continuous Assessments
	Assessment 4	16 th Week Final Written Exam
c- Weighing of Assessment:	7 th Week Examination	30 %
	12 th Week Examination	15%+5 % practical
	Final-term Examination	40 %
	Oral Examination	0 %
	Practical Examination	0 %
	Semester Work	10 %
	Total	100%
8- List of References:	M. Chander, "Power System Protection and Switch Gears", New Age International Limited Publishers, 2002	
a- Course Notes		
b- Required Books (Textbooks)	A.T Johns & S.K. Salman, "Digital Protection for Power System", Peter Peregrinus, 1995	
c- Recommended Books		
d- Periodicals, Web Sites, ..., etc.		

Course Instructor

Name: **Prof.Ahmed Lotfy**

Signature:

Head of Department

Name: **Prof. Hamdy Ashour**

Signature:

Dean of College of Engineering and Technology of AASTMT

Name: **Prof. Moustafa Hussein Aly**

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Executive Manager of Quality Assurance Center of AASTMT

Name: **Prof. Aziz Ezzat**

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