



Annual Course Report

Program on which this course is given:	Diploma of Applications of Automatic Control of Mech. Power Systems
Department offering the program:	Mechanical Power Engineering Department - ACC control Lab
Department offering the course:	Mechanical Power Engineering Department - ACC control Lab
Academic Level:	Elective Course-1 st or 2 nd Term of the Diploma of Graduate Studies
Date	2 nd Term 2014/2015
Semester (based on final exam timing)	<input type="checkbox"/> Fall <input type="checkbox"/> Spring <input checked="" type="checkbox"/> Summer

A - Basic Information

1. Title:	Advanced Applications of PLCs in Automatic Control Systems					Code:	MEP 567	
2. Units/Credit hrs per week:	Lectures	3 Credit hours per week	Tutorial	--	Practical	--	Total	3
3. Names of lecturers contributing to the delivery of the course: • Associate Professor Dr. Mohsen S. Soliman								
4. Course coordinator:	Associate Professor Dr. Mohsen S. Soliman			External evaluator:	NA at this time			

B- Statistical Information (for Summer 2013/2014)

See the Next Tables for all Grades and statistics for the last summer term 2013/2014

جامعة القاهرة كلية الهندسة - قسم هندسة القوى الميكانيكية

نتيجة الفصل الدراسي الأول للعام الأكاديمي 2014/2015

دبلوم تطبيقات التحكم الأوتوماتيكي في نظم القوى - طلاب تم تسجيلهم حسب اللانحة القديمة

الحالة	التقدير	المعدل التراكمي	مجموع النقاط الكلية	إجمالي الساعات المكتسبة	عدد الفصول الدراسية	مق 571 تطبيقات المعامل الافتراضية في التحكم في أنظمة تكييف الهواء المركزية	مق 567 تطبيقات متقدمة لتكنولوجيا PLC في نظم التحكم الأتوماتيكي	مق 599 المشروع	مق 562 استخدام الدوائر الهيدروليكية في نظم التحكم الأتوماتيكي	مق 561 التحكم الأتوماتيكي-النظرية والتطبيق في نظم القوى الميكانيكية	مق 560 أجهزة القياس والاختبارات والتحكم في نظم القوى الميكانيكية	رقم الطالب
خريج	B	3.1	92.7	30	3		+B	+B				1
خريج	-B	2.7	82.2	30	3		+B	-A				2
خريج	+B	3.6	107	30	3		-A	+B				3
خريج	+B	3.5	104	30	3		A	+B				4
خريج	+B	3.4	101	30	3		+B	A				5
خريج	+B	3.3	99.3	30	3		-A	A				6
خريج	B	3.2	96.3	30	3		-A	A				7
خريج	B	3.1	92.7	30	2	+C	-A	-B	+B	-A	+B	8
خريج	+B	3.6	109	30	2	-B	-A	-A	-A	A	-A	9
مستمر	-A	3.9	81	21	2	+B	A		A	A	A	10

C- Professional Information

1. Course Teaching:

• Topics actually taught	No. of hrs	Lecture	Tutorial/ Practical	Lecturer
Review of terminology of Hardware and Accessories of several types of industrial PLCs –Review of several types of discrete or analog Input/output signals and associated I/O modules- Review of operation modes and technical differences between PLC systems and expansion parts/devices- Selection of proper PLC expansion module for analog/digital system and special functions parts- Review of terminology of Software and Simulators for PLC automatic control systems- Getting proper reference & technical manual for selection, programming, configuration and for installation of PLC unit and accessories- Review of various parts	36 hrs	3 hrs/ week for 12 weeks before the final term	---	Associate Professor Dr. Mohsen S. Soliman



of PLC languishes for LAD, FBD, STL programs & Block functions- Performing actual working and detailed steps to plan, design, install, build, configure, program, test, debug, trouble-shooting and finally to run a practical PLC project- Applications and Practical Examples for using PLC units in Automatic Control of Mech. Power Systems- Various Examples and Applications for the Ladder Diagrams, Function Charts, and Statement Lists--Applications on PC using PLC simulation and Computer Programs.

• Topics taught as a percentage of the content specified: >90% 70-90% <70%

• Reasons in detail for not teaching any topic:

- Reducing the number of weeks/ Semester for many social and political reasons.
- Many mandatory vacations as per requirements of the university management. The term is only 12 weeks.

• If any topics were taught which are not specified, give reasons in detail: Non

2. Teaching and Learning Methods:

Lectures	Practical/ Training	Seminar/ Workshop	Class Activity	Case Study	Projects	Laboratory	E-learning	Assignments /Homework	Other: Submitting reports
(√)	()	()	(√)	(√)	()	()	(√)	(√)	

If teaching and learning methods were used other than those specified, list and give reasons: Non

3. Student Assessment:

Method of Assessment	Percentage of total
-All in-term works, sheets, and Reports	30%
-Final-term formal, written Examination	70%
-Total	100%

• Members of Examination Committee: Associate Professor Dr. Mohsen S. Soliman & Assistance Professor Dr. Amro Abdel-Raouf

• Role of external evaluator: Review program ILOs

4. Facilities and Teaching Materials: Totally adequate Adequate to some extent Inadequate

List any inadequacies:

Classes are not totally suits the Multi-Media Facilities
Classroom has no white screen for the data show and it needs more ventilation fans.

5. Exams/ILOs Matrix

• ILOs/Evaluation Source Matrix

ILOs	Source of Evaluation									
	Assignments	Quizzes	Experiments	Lab Exam	Midterm Exam	Projects	Term Papers/Reports	Final Exam	Others 1	Others 2
<ul style="list-style-type: none"> ❖ Knowledge and Understanding ❖ Intellectual Skills ❖ Professional and Practical Skills ❖ General and Transferable Skills 										
<p>a) Knowledge and Understanding:</p> <p>-Advanced hardware and software components of many practical and industrial PLC systems.</p> <p>-Advanced applications and detailed examples for all working steps showing how to design, build, configure, program, test, trouble-shooting and finally to run a PLC project.</p> <p>-Typical PLC design projects to show the LAD, FBD and STL programs and to give the students skills and knowledge to solve some practical and actual PLC examples and control projects.</p>	√	√	-	-	-	-	√	√	-	-



<p>b) Intellectual Skills: -Select and apply appropriate technical and optimum method in doing engineering design and analysis of automatic control problems. -Searching for scientific information and adopting automatic control self-E-learning capabilities. -Analyze and compare the component effects, performance, and efficiency of different types of advanced PLC automatic control systems. -Analyze and compare the component effects, performance, and efficiency of different types of advanced PLC automatic control systems. -Analyze and compare the component effects, performance, and efficiency of different types of advanced PLC automatic control systems. -Apply the concept of software simulation for analysis, diagnostics & operation of various types of advanced PLC automatic control systems. -Compare between various types of advanced PLC components, and complete systems. - Apply scientific and engineering analysis for advanced PLC circuits/systems.-Apply scientific and engineering analysis for</p>	√	√	-	-	-	-	√	√	-	-
<p>c) Professional and Practical Skills: -Identify several types of automatic control problems using advanced PLC circuits/systems which are essential for the design and operation of mechanical power systems and energy transfer processes. -Perform professional design and modelling for automatic control problems using advanced PLC circuits/systems -Suggest possible alternative solutions for various types of components for automatic control problems using advanced PLC circuits/systems. -Diagnose efficiency and performance of different types of advanced PLC automatic control circuits/systems. - Analyze different types of automatic control problems using advanced PLC circuits/systems.</p>	√	√	-	-	-	-	√	√	-	-
<p>d) General and Transferable Skills: Having successfully completed this course, the student should have the ability to do: -Performeng. assemblyof differentadvanced PLC circuits & components in one control system. -Transfer knowledge, Work in group and Communicate in written and oral forms, in English. - Use IT& evolutionary technological tools& PC applications (Excel, Mat lab, Virtual labs, .etc). - Prepare&write reports, Manipulate&sort data, Think logically, and continuous self-E-learning. -Identify practical problems and compare between different technologies used for advanced PLC circuits for automatic control systems. -Organise & manage time & resources effectively; for short-term and longer-term commitments.</p>	√	√	-	-	-	-	√	√	-	-

- Midterm Exam: No Midterm Exam for graduate studies programs

Question	ILOs									
	1	2	3	4	5	6	7	8	9	10
1. (problem 1)										
2. (problem 2)										



• Final Exam:

Different parts of the ILOs are evaluated adequately through-out various part of the final exam

Question	ILOs									
	1	2	3	4	5	6	7	8	9	10
1. (problem 1)	√	√	√							
2. (problem 2)			√	√	√					
3. (problem 3)					√	√	√	√		
4. (problem 4)							√	√	√	√
5. (problem 5)								√	√	√

6. Administrative Constraints: Reducing the number of the weeks per semester

▪ List any difficulties encountered:

- Reducing the number of weeks/ Semester for many social and political reasons
- Many mandatory vacations as per requirements of the university management. The term is only 12 weeks.

7. Comments from external evaluator(s):	Response of Course Team
Not available in writing for instructors to respond to	None
8. Comments from Students:	Response of Course Team
Done but not available in writing for instructors to respond to	None
9. Course Enhancement:	

Progress on actions identified in the previous year's action plan:

Action	State whether or not completed and give reasons for any non-completion
Upgrading Teaching facilities Supply visual aids for the classrooms Maintenance of classrooms	Not completed due to administrative problems
10. Action Plan for Academic Year 2014 – 2015	

Actions Required	Completion Date	Person Responsible
Upgrading Teaching facilities Supply visual aids Maintenance of classrooms Incorporate more practical materials & measurement experimental labs in the course Make a Mat lab programs to illustrate the basic ideas of each topic with graphs	End of 2015	Administration and Members of The Examination Committee
Course Coordinator:	Associate Professor Dr. Mohsen S. Soliman	
Signature:		