



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:	Mandatory Course- 1 st Term of the Diploma of Graduate Studies
Date	1 st Term 2014/2015
Semester (based on final exam timing)	<input checked="" type="checkbox"/> Fall <input type="checkbox"/> Spring

A - Basic Information

1. Title:	Automatic Control - Theory and Applications in Mechanical Power Systems						Code:	MEP 561
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 & Assistance Professor Dr. Amro Abdel-Raouf		
4. Course coordinator:	Associate Professor Dr. Mohsen S. Soliman	External evaluator:	NA at this time

B- Statistical Information (for 2014/2015)

See the Next Tables for all Grades and statistics for the last term and the one before it

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 اللائحة الجديدة 2015											
رقم الطالب	(مق 560) أجهزة القياس والاختبارات والتحكم في نظم القوى الميكانيكية	(مق 561) التحكم الأتوماتيكي - النظرية والتطبيق في نظم القوى الميكانيكية	(مق 562) استخدام الدوائر الهيدروليكية في نظم التحكم الأتوماتيكي	(مق 571) تطبيقات المعامل الافتراضية في التحكم في أنظمة تكييف الهواء المركزية	(مق 590) انتقال الحرارة والكتلة	عدد الفصول الدراسية	إجمالي الساعات المكتسبة	مجموع النقاط الكلية	المعدل التراكمي	التقدير	الحالة
1	-A	A	A		+B	1	12	45	3.8	-A	مستمر
2	-B	B	+B		C	1	12	33	2.8	-B	مستمر
3	A	A	+A	+C		1	12	43	3.6	+B	مستمر
4	B	+B	-A	B		1	12	39	3.3	+B	مستمر
5	B	B	B	-B		1	12	35	2.9	-B	مستمر
6	+C	+B	-A		F	1	9	28	2.3	+C	مستمر
7	+B	-A	-A		+C	1	12	39	3.3	+B	مستمر
8	+B	+B		-B		1	9	28	3.1	B	مستمر
9	A	A	A			1	9	36	4	+A	مستمر
10	-A	-A	-A		F	1	9	33	2.8	-B	مستمر
11	-A	B	B		-B	1	12	37	3.1	B	مستمر
12	-A	-A	A	C		1	12	40	3.4	+B	مستمر
13	+B	+B	A		+C	1	12	39	3.2	B	مستمر
14	C	-B	C			1	9	20	2.2	C	مستمر
15	A	+B	A		D	1	9	37	3.1	B	مستمر
16	+C	-A	+B	B		1	12	37	3.1	B	مستمر
17	+C	-A	+A		-B	1	12	38	3.2	B	مستمر
18	A	A	+A	+B		1	12	46	3.8	-A	مستمر
19	-A	A	+B	B		1	12	42	3.5	+B	مستمر
20	-A	-B	-A		+C	1	9	26	2.9	-B	مستمر
21	-A	A	+B	B		1	12	42	3.5	+B	مستمر



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 اللائحة 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 الأوتوماتيكي	مق 599 المشروع	مق 562 استخدام الدوائر الهيدروليكية في نظم التحكم الأوتوماتيكي	مق 561 التحكم الأوتوماتيكي - 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
<ul style="list-style-type: none"> - Introduction to Basics and definitions and terminologies associated with automatic control theory. - Various types of automatic control loops in mechanical power and energy transfer systems. - Essential requirements of accuracy, efficiency, safety, and stability of automatic control systems - Concepts of mathematical modelling of various mechanical power systems and energy transfer processes - The element and the whole system transfer functions, and Block diagram analysis method. - Laplace Transform & inverse Laplace technique to solve the system's ordinary time-dependent differential equations. - Instantaneous dynamic response of control system and its graphical presentation on an output-time scale for various types of different input testing functions. - Main definitions and control characteristics of dynamic response of 1st and 2nd order automatic control systems. - The analogy between various types of mechanical control systems and electric control systems. - Practical applications of automatic control theory in different mechanical power and heat and mass transfer equipments. 	36 hrs	3 hrs/ week for 12 weeks before the final term exam	---	Associate Professor Dr. Mohsen S. Soliman & Assistance Professor Dr. Amro Abdel-Rauf
<ul style="list-style-type: none"> • Topics taught as a percentage of the content specified: 	<input type="checkbox"/> >90%	<input checked="" type="checkbox"/> 70-90%	<input type="checkbox"/> <70%	
<ul style="list-style-type: none"> • 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.				
<ul style="list-style-type: none"> • 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:				<input type="checkbox"/> Totally adequate <input checked="" type="checkbox"/> Adequate to some extent <input type="checkbox"/> 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
❖ Knowledge and Understanding ❖ Intellectual Skills ❖ Professional and Practical Skills ❖ General and Transferable Skills										
a) Knowledge and Understanding: Having successfully completed this course, the post-graduate student should have knowledge and understanding of: a1- Basics and various definitions and terminologies associated with automatic control theory. a2- Various types of automatic control loops in mechanical power and energy transfer systems. a3- Essential requirements of accuracy, efficiency, safety, and stability of automatic control systems a4- Concepts of mathematical modelling of various mech. power systems & energy transfer processes a5- The element and the whole system transfer functions, and Block diagram analysis method. a6- Laplace Transform & inverse Laplace technique to solve the system's ordinary time-dependent differential equations. a7- Instantaneous dynamic response of control system and its graphical presentation on an output-time scale for various types of different input testing functions. a8- Main definitions and control characteristics of dynamic response of 1 st and 2 nd order automatic control systems. a9- The analogy between various types of mechanical control systems and electric control systems. a10- Practical applications of automatic control theory in different mechanical power and heat transfer and mass transfer processes and equipments.	√	√	-	-	-	-	√	√	-	-



<p>b) Intellectual Skills: Having successfully completed this course, the student should have the ability to do:</p> <p>b1- Select and apply appropriate mathematical and technical methods to model, analyze, and solve automatic control problems.</p> <p>b2- Search for scientific and technical information and adopt control self-learning capabilities. of pressure, temperature, flow rate, flow velocity, and force ...etc.</p> <p>b3- Analyze and compare the performance and time response of different types of ordinary time-dependent differential eqns of control systems.</p> <p>b4- Solve numerical and practical examples on automatic control systems.</p> <p>b5- Apply scientific and engineering analysis for different mechanical power control systems.</p> <p>b6- Apply and use the Laplace Transform and the inverse Laplace tables for mathematical modeling, block diagram reduction and for solving the system's ordinary time-dependent differential equations.</p>	√	√	-	-	-	-	√	√	-	-
<p>c) Professional and Practical Skills: Having successfully completed this course, the student should have the ability to do:</p> <p>c1- Identify several types of automatic control problems which are essential for design and operation of mechanical power systems and energy transfer processes.</p> <p>c2- Perform professional design and modelling for different automatic control systems.</p> <p>c3- Suggest possible alternative solutions for various types of automatic control systems.</p> <p>c4- Use and apply different tables and equations for Laplace and inverse Laplace Transformations.</p> <p>c5- Diagnose stability and dynamic response problems of automatic control of mechanical power systems and energy transfer equipments.</p> <p>c6- Formulate and analyze heat transfer and fluid flow practical problem related to control fields.</p>	√	√	-	-	-	-	√	√	-	-
<p>d) General and Transferable Skills: Having successfully completed this course, the student should have the ability to do:</p> <p>d1- Perform engineering calculations, draw feed-back control circuits, block diagrams, graphical presentation of experimental data, and perform data-regression analysis.</p> <p>d2- Transfer knowledge, Work in group, & Communicate in written & oral forms, in English.</p> <p>d3- Use IT and evolutionary technological tools & PC applications (Excel, Mat lab, Virtual labs, .etc).</p> <p>d4- Prepare & write reports, Manipulate & sort data, Think logically, and continuous self-E-learning.</p> <p>d5- Identify practical problems, compare between different technologies for control systems.</p> <p>d6- Organise, manage time and 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 & Assistance Professor Dr. Amro Abdel-Raouf	
Signature:		