



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:	Using Hydraulic Circuits in Automatic Control Of Mechanical Power Systems						Code:	MEP 562		
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 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 المكتسبة	إجمالي الساعات	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	-B	-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

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 599 المشروع	مق 567 تطبيقات متقدمة لتكنولوجيا PLC في نظم التحكم الأتوماتيكي	مق 571 تطبيقات المعامل الافتراضية في التحكم في أنظمة تكييف الهواء المركزية	عدد القبول الدراسية	إجمالي الساعات المكتسبة	مجموع النقاط الكلية	المعدل التراكمي	التقدير	الحالة
1					+B		3	30	92.7	3.1	B	خريج
2					+B		3	30	82.2	2.7	-B	خريج
3					-A		3	30	107	3.6	+B	خريج
4					A		3	30	104	3.5	+B	خريج
5					+B		3	30	101	3.4	+B	خريج
6					A		3	30	99.3	3.3	+B	خريج
7					-A		3	30	96.3	3.2	B	خريج
8	+B	-A	+B		-A	+C	2	30	92.7	3.1	B	خريج
9	-A	A	-A		-A	-B	2	30	109	3.6	+B	خريج
10	A	A	A		A	+B	2	21	81	3.9	-A	مستمر

C- Professional Information

1. Course Teaching:

- Topics actually taught

-Introduction, Basics and definitions of Hydrostatics(i.e.,work, Pressure, transportation and magnification of force and moment)-
-Hydrodynamics (Continuity,Bernoulli's eqn.,Energy, types of fluid flow)
-Methods of Power transportation
-Basic components of Hydraulic Systems-Types of Positive Displacement Pumps (Gear, Vane, and piston pumps)- Types of Hydraulic Actuators (Cylinders, Engines, Semi-rotatingEngines)-Pressure Valves–Directional Valves–Flow Valves-Non-return Valves – Conditioning of Hydraulic Oils (filters, Heat Exchangers, Tanks)- Oil Piping–Auxiliaries (Accumulators, Manifolds, Flow Meters, Pressure Gauges, Switches).
-Hydraulic Symbols– Reading Hydraulic Schematics – Basic Hydraulic Circuits (Direction Control, Speed Control, 2-cylinders Control, Pumps Curves, Step-displacement diagram, Numbering of Hydraulic Elements).
-Practical applications of automatic control Hydraulic systems/systems in different mechanical power and heat and mass transfer equipments.

No. of hrs	Lecture	Tutorial/ Practical	Lecturer
36 hrs	3 hrs/ week for 12 weeks before the final term exam	---	Associate Professor Dr. Mohsen S. Soliman

- 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:	<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	Papers/Repo	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 Hydraulic control circuits/systems. a2- Requirements of general interactive virtual lab program to study and analyze control systems. a3- Basics of on-line interactive virtual lab to study and analyze Hydraulic control circuits/systems. a4- Basic and essential components of Hydraulic circuits as types of automatic control systems for producing mechanical type outputs. a5- Various types of positive displacement Pumps, hydraulic actuators, pressure control valves, directional control valves, flow control valves, check or non-return valves, fluid oil conditioning methods, oil conductors, and hydraulic circuit auxiliaries. a6- Essential hydraulic symbols used for presentation of all types of hydraulic circuits & systems. a7- Concepts of reading hydraulic circuits schematics for proper analysis of hydraulic system function, performance and type of the circuit output.	√	√	-	-	-	-	√	√	-	-



<p>b) Intellectual Skills: Having successfully completed this course, the student should have the ability to do:</p> <p>b1-Select and apply appropriate technical and optimum method in doing engineering design and analysis of automatic control problems using Hydraulic systems.</p> <p>b2- Searching for scientific information and adopting automatic control self-E-learning capabilities.</p> <p>b3-Analyze and compare component effects, performance, and efficiency of different types of automatic control Hydraulic circuits/systems.</p> <p>b4- Apply the concept of software simulation of diagnostics & operation of various types of practical Hydraulic circuits/systems.</p> <p>b5- Compare between various types of Hydraulics symbols, components, & complete circuits/systems.</p> <p>b6- Select & apply appropriate Hydraulics symbols, components to design, model, analyze, and solve automatic Hydraulic control problems.</p> <p>b7-Apply scientific & engineering analysis for Hydraulic circuits/systems.</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 Hydraulic 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 Hydraulic control systems.</p> <p>c3- Suggest possible alternative solutions for various types of Hydraulic components and parts.</p> <p>c4- Diagnose efficiency and performance of different types of Hydraulic control circuits/systems.</p> <p>c5- Analyze different types of Hydraulic symbols, schematics, and control circuits.</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 assembly of different types of Hydraulic parts, schematics, and control circuits.</p> <p>d2- Transfer knowledge, Work in group, and Communicate in written and oral forms, in English.</p> <p>d3- Use IT and evolutionary technological tools and PC applications (Excel, Mat lab, Virtual labs, .etc).</p> <p>d4- Prepare and write reports, Manipulate & sort data, Think logically, and continuous self-E-learning.</p> <p>d5- Use computer software applications (Excel, Matlab, AutoCAD, ...etc).</p> <p>d6- Identify practical problems, compare between different technologies for Hydraulic systems.</p> <p>d7- Organise and 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	
Signature:		