



## 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- 2 <sup>nd</sup> Term of the Diploma of Graduate Studies
Date	2 <sup>nd</sup> Term 2014/2015
Semester (based on final exam timing)	<input type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring

### A - Basic Information

1. Title:	<b>Advanced Applications of Hydraulic Circuits in Automatic Control Systems</b>					Code:	<b>MEP 566</b>		
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 2013/2014)

See the Next Table for all Grades and statistics for the last spring-term 2013/2014

كلية الهندسة - جامعة القاهرة - قسم هندسة القوى الميكانيكية دبلوم تطبيقات التحكم الأوتوماتيكي في نظم القوى الميكانيكية نتيجة الفصل الدراسي الثاني للعام الأكاديمي 2013/2014 (حسب اللانحة القديمة)											
رقم الطالب	مق 590	مق 579	مق 566	مق 564	مق 563	عدد الفصول الدراسية	إجمالي الساعات المكتسبة	مجموع النقاط الكلية	المعدل التراكمي	التقدير	الحالة
	انتقال الحرارة والكتلة	تطبيقات خطوط الأنابيب الصناعية	تطبيقات متقدمة للدوائر الهيدروليكية في نظم التحكم الأتوماتيكي	استخدام PLC وتكنولوجيا المعلومات في نظم التحكم الألى	استخدام المعامل الافتراضية في تحليل نظم التحكم الأتوماتيكي						
1	C	B+	A	B	B	2	24	72.9	3	B	مستمر
2	C	B	B	B	B-	2	24	61.2	2.6	C+	مستمر
3		A-	A	A-	B+	2	24	86.1	3.6	B+	مستمر
4	----	----	----	----	----	2	12	34.2	----	----	غياب
5		A-	B+	A-	B+	2	24	81.9	3.4	B+	مستمر
6		B+	A-	B	B	2	24	78.9	3.3	B+	مستمر
7	----	----	----	----	----	2	12	39.9	---	----	غياب
8	----	A-	A	B	B	2	24	76.2	3.2	B	مستمر
9	----	B+	B+	B+	B+	2	24	73.2	3	B	مستمر
10	C+	B+	----	B+	B	1	12	35.7	3	B	مستمر
11	A-	A-	----	A-	A-	1	12	44.4	3.7	A-	مستمر
12	C	B	----	B+	B	1	12	33.9	2.8	B-	مستمر
13	----	----	----	A-	A	1	6	23.1	3.9	A-	مستمر

### C- Professional Information

#### 1. Course Teaching:

• Topics actually taught	No. of hrs	Lecture	Tutorial/ Practical	Lecturer
<b>Part I: Examine, Study and Practice How to Operate some new and practical Hydraulic Circuits by Using a new Virtual Lab: THW-12 (the</b>	36 hrs	3 hrs/ week	---	Associate Professor



<p>manual for this Virtual Lab is used as self-learning part).</p> <p>-Review total of 16 different components of Hydraulic Systems (using same Virtual Lab:THW-12 or an introductory Virtual Lab: THW-11: Hydraulic Circuits components).From MEP562, students must know everything &amp; symbols used for: Positive Displacement Pumps, Actuators, Pressure Control Valves, Directional Control Valves, Flow Control Valves, Filters, Flow Meters, Accumulators, Pressure Switches, Tanks, Pipes, Manifolds, Heat Exchangers, etc. Also From MEP562 students must know how to read and understand some practical Hydraulic circuits or Hydraulic Schematics.</p> <p><b>Part II: Review &amp; examine Analogy &amp; Difference between components, operation, and functions of Hydraulic and Pneumatic circuits – Examine Basics of Pneumatic logic circuits and processes and using of virtual labs for analysis of pneumatic control circuits - Examine Basics of various proportional hydraulic valves and circuits, electric input, and feed-back of a proportional solenoid- Basics and various types of Servo-hydraulic valves and circuits, electric requirements for input, feed-back signals of servo-valves, and practical applications of servo-hydraulic circuits.</b></p>		for 12 weeks before the final term exam	Dr. Mohsen S. Soliman						
<ul style="list-style-type: none"> <li>• Topics taught as a percentage of the content specified:</li> </ul>		<input type="checkbox"/> >90% <input checked="" type="checkbox"/> 70-90% <input type="checkbox"/> <70%							
<ul style="list-style-type: none"> <li>• Reasons in detail for not teaching any topic:</li> </ul>									
<p>- Reducing the number of weeks/ Semester for many social and political reasons</p> <p>- Many mandatory vacations as per requirements of the university management. The term is only 12 weeks.</p>									
<ul style="list-style-type: none"> <li>• If any topics were taught which are not specified, give reasons in detail:</li> </ul>									
Non									
<b>2. Teaching and Learning Methods:</b>									
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									
<b>3. Student Assessment:</b>									
• 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
<ul style="list-style-type: none"> <li>❖ Knowledge and Understanding</li> <li>❖ Intellectual Skills</li> <li>❖ Professional and Practical Skills</li> <li>❖ General and Transferable Skills</li> </ul>										
<p><b>a) Knowledge and Understanding:</b></p> <ul style="list-style-type: none"> <li>-Analogy and Difference between essential components, operation, and functions of Hydraulic and Pneumatic circuits.</li> <li>-Basics of Pneumatic logic circuits and Pneumatic control processes and using of an advance and applied virtual labs to study &amp; analyze the performance of various pneumatic control circuits.</li> <li>-Basics of proportional hydraulic control system as compared to on-off hydraulic control systems -Basics and essentials of proportional hydraulic valves and circuits, electric input, and feed-back of a proportional solenoid.</li> <li>-Basics and various types of Servo-hydraulic valves and circuits, electric requirements for input, feed-back signals of servo-valves, and practical applications of servo-hydraulic circuits.</li> </ul>	√	√	-	-	-	-	√	√	-	-
<p><b>b) Intellectual Skills:</b></p> <ul style="list-style-type: none"> <li>-Select and apply appropriate technical and optimum method in doing engineering design and analysis of automatic control problems.</li> <li>-Searching for scientific information and adopting automatic control self-E-learning capabilities.</li> <li>-Analyze and compare the component effects, performance, and efficiency of different types of Hydraulic &amp; Pneumatic on-off control systems.</li> <li>-Analyze &amp; compare the component effects, performance, and efficiency of different types of proportional hydraulic automatic control systems.</li> <li>-Analyze &amp; compare the component effects, performance, and efficiency of different types of Servo-hydraulic automatic control systems.</li> <li>-Apply the concept of software simulation for analysis, diagnostics &amp; operation of various types of Hydraulic and Pneumatic systems.</li> <li>-Compare between various types of Hydraulic and Pneumatic components, and complete systems.</li> <li>-Apply scientific and engineering analysis for proportional &amp; Servo hydraulic circuits/systems.</li> </ul>	√	√	-	-	-	-	√	√	-	-
<p><b>c) Professional and Practical Skills:</b></p> <ul style="list-style-type: none"> <li>-Identify several types of on-off Hydraulics and Pneumatics and Proportional and Servo Hydraulics automatic control problems which are essential for the design and operation of mechanical power systems and energy transfer processes.</li> <li>-Perform professional design and modelling for different Hydraulics and Pneumatics automatic control systems.</li> <li>-Suggest possible alternative solutions for various types of Hydraulics &amp; Pneumatics components.</li> <li>-Diagnose efficiency and performance of different types of Hydraulic control circuits/systems.</li> <li>- Analyze different types of Hydraulic &amp; Pneumatic processes on virtual labs.</li> </ul>	√	√	-	-	-	-	√	√	-	-



**d) General and Transferable Skills:**

- Perform eng. assembly of different Hydraulic and Pneumatic 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, compare between different technologies for Hydraulic/Pneumatic automatic control systems.  
- Organise & manage time & resources effectively; for short-term and longer-term commitments.

√	√	-	-	-	-	√	√	-	-
---	---	---	---	---	---	---	---	---	---

- 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



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