



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Applications of Hydraulic-Pneumatic On the Agricultural Machinery							
Course Code		ZTM519		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	196 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		Definition of hydraulic and pneumatic systems, principles, the importance of industry and agricultural machinery applications.							
Course Content		The basic principles of hydraulics, hydraulic system components and their symbols, hydraulic fluids, hydraulic pipes and hoses, tank and filters, pumps, pick-way valves, pressure control valves, flow control valves, hydraulic motors and spoolers, hydraulic cylinders, connection types, circuit diagrams, Comparison of hydraulic and pneumatic systems, Definition and properties of pneumatics, pneumatic element and symbols, basic principles, compressors, compressed air preparation pneumatic control circuits and their applications are covered.							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Case Study, Individual Study					
Name of Lecturer(s)									

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	40
Final Examination	1	60

Recommended or Required Reading

1	Hidrolik ve Pnömatik, Karacan, İ., 2003. Bizim Büro Basımevi, Demirtepe, Ankara.
2	Hidrolik, Festo Didactic Öğretim Kitabı, 1991. Merkle, D., Schrader, B., Thomas, M., İstanbul.
3	Pnömatikle Otomasyon, Festo Didactic Öğretim Kitabı, İstanbul

Week	Weekly Detailed Course Contents	
1	Theoretical	The definition and the basic principles of hydraulics
2	Theoretical	Properties of oils and hydraulic circuit
3	Theoretical	The basic elements of the hydraulic circuit and working principles
4	Theoretical	Hydraulic valves, operating principles and characteristics
5	Theoretical	Hydraulic circuits, auxiliary equipment and operating principles
6	Theoretical	Symbols, signs, power circuits, fault detection, maintenance, repair.
7	Theoretical	Application of hydraulic circuits work benches
8	Intermediate Exam	Midterm exam
9	Theoretical	Applications of hydraulic circuits in agricultural machinery
10	Theoretical	The definition and the basic principles of pneumatics
11	Theoretical	The basic elements of pneumatic circuits
12	Theoretical	Pneumatic valves, pneumatic circuit ancillary equipments
13	Theoretical	Symbols, signs, power circuits, fault detection, maintenance, repair.
14	Theoretical	Application of hydraulic circuits work benches.
15	Theoretical	Applications of hydraulic circuits in agricultural machinery.
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	2	2	56
Lecture - Practice	14	2	2	56
Assignment	14	0	1	14
Term Project	3	0	6	18
Midterm Examination	1	25	1	26



Final Examination	1	25	1	26
Total Workload (Hours)				196
[Total Workload (Hours) / 25*] = ECTS				8
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	To understand the basic principles of hydraulics and pneumatics.
2	To understand Pneumatic and hydraulic system components and characteristics
3	To understand the working principles of pneumatic and hydraulic systems
4	Recognize and interpret the operation of a circuit diagram and drawn elements
5	Able to make the selection and circuit elements in creating a new system.

Programme Outcomes (Agricultural Machinery Master)

1	Identification, formulation and solving the problems in the field of Agricultural Machinery
2	The ability to use modern engineering tools and techniques
3	The ability to use the information, which is obtained by following the scientific and technological developments, in the academic life and practice.
4	The ability to evaluate multi-faced relationship between them by understanding interaction among agricultural technology, soil, plants and animals
5	Professionalism and ethical responsibility
6	The ability to work in disciplinary and multi-disciplinary teams
7	The ability to communicate effectively
8	The ability to do research for accessing information and to use data base and other resources
9	The ability to do analyze and interpret the experimental results and the design of experiment
10	The ability to identify and interpret knowledge of current professional issues and events
11	The ability to get aware the universal and social effects of engineering solutions and applications
12	Accordance with the requirements of science and technology, ability to use scientific knowledge creative

Contribution of Learning Outcomes to Programme Outcomes 1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High

	L1	L2	L3	L4	L5
P1	5	5	5	5	5
P2	5	5	5	5	5
P3	5	5	5	5	5
P6	5	4	4		
P9					5
P10				5	
P12	5	5	5	5	5

