



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Design of the Pumps							
Course Code		ZTM514		Course Level		Second Cycle (Master's Degree)			
ECTS Credit	8	Workload	204 (<i>Hours</i>)	Theory	3	Practice	0	Laboratory	0
Objectives of the Course		The aim of the course is to instruct students about pump design concepts, design of pumps, calculating and drawing subjects							
Course Content		Basic pump sizes calculation, the specifications of the manufacturing and construction of the pump bodies, determination of operating characteristics of the pump, pump test at the demanded general features, the measurement of the characteristic, centrifugal pump calculation examples							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Demonstration, 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	Tam santrifüj pompalar, Doç. Dr. B. K. Baysal, İ. T. Ü. Teknik Üniv. Matbaası, 1975, İstanbul
2	Pompalar, Vantilatörler, Kompresörler, C. Özgür, H. F. Yazıcı, İ. T. Ü. Kütüphanesi Sayı: 856, 1971, İstanbul

Week	Weekly Detailed Course Contents	
1	Theoretical	Calculation the size of the main pump: Determining the type of pump, calculation of the shaft and engine power, calculation of the shaft diameter
	Preparation Work	Research
2	Theoretical	Pump parts calculation: Impeller sizing, determining the conditions of input and output impeller
	Preparation Work	Research
3	Theoretical	Pump parts calculation: Drawing of impeller and wing, calculating and drawing volute
	Preparation Work	Research
4	Theoretical	Pump parts calculation: Calculating and drawing volute
	Preparation Work	Research
5	Theoretical	Pump parts calculation: Diffuser calculation, calculating and drawing of exit and return diffuser
	Preparation Work	Research
6	Theoretical	The features of manufacturing and construction of the pump parts: Impeller, wear rings, shafts, critical speed calculation, stuffing box, bearings
	Preparation Work	Research
7	Theoretical	Other rates of the volute and the pump, axial thrust and balancing shapes
	Preparation Work	Research
8	Intermediate Exam	Midterm exam
9	Theoretical	Determination of operating characteristics of the pump: Suction depth and cavitation, calculation of net positive charge to absorb, installation fasteners, geometrically determining the height, losses in the suction and discharge pipes
	Preparation Work	Research
10	Theoretical	Demanded general features at the pump test systems, the measurement of the characteristic: Open-circuit test systems pump
	Preparation Work	Research
11	Theoretical	The measurement of the characteristics: Closed-circuit pump test systems
	Preparation Work	Research
12	Theoretical	Centrifugal pump calculation examples
	Preparation Work	Research
13	Theoretical	Centrifugal pump calculation examples



13	Preparation Work	Research
14	Theoretical	Centrifugal pump calculation examples
	Preparation Work	Research
15	Theoretical	Centrifugal pump calculation examples
	Preparation Work	Research
16	Final Exam	Final exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	4	2	84
Lecture - Practice	14	0	2	28
Assignment	14	0	2	28
Term Project	1	0	20	20
Midterm Examination	1	20	2	22
Final Examination	1	20	2	22
Total Workload (Hours)				204
[Total Workload (Hours) / 25*] = ECTS				8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Learning the concepts of pumps
2	Understanding and interpretation of the characteristics of centrifugal pumps
3	Doing calculations and applications related in centrifugal pumps
4	Designing the pump test system
5	Designing the pump test 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
P1	5	5	5	5
P2	5	5	5	5
P3	4	4	4	5
P4	3	3	3	3
P8	4	4	4	5
P9	5	5	5	5
P10	5	5	5	5
P11	5	5	5	5
P12	5	5	5	5

