



AYDIN ADNAN MENDERES UNIVERSITY COURSE INFORMATION FORM

Course Title		Drainage Engineering							
Course Code		ZTY605		Course Level		Third Cycle (Doctorate Degree)			
ECTS Credit	6	Workload	150 (<i>Hours</i>)	Theory	2	Practice	2	Laboratory	0
Objectives of the Course		Course Objectives In recent years, new developments are provided in irrigation and drainage. The aim of this course is to teach the new techniques in drainage							
Course Content		Course Content Extensive drainage study for collecting necessary data to project drainage systems, Drying marsh and project basis of drainage systems with open channels, Projection of drainage systems in steady and unsteady flow conditions, Choosing drain depth, Drawing drainage problems, Establishing of tests and technical appropriateness, Determining criteria used in draining scheme and interpretation of test results							
Work Placement		N/A							
Planned Learning Activities and Teaching Methods				Explanation (Presentation), Discussion, Project Based Study, Individual Study, Problem Solving					
Name of Lecturer(s)									

Assessment Methods and Criteria

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

Recommended or Required Reading

1	Gemalmaz, E., "Drainage Engineering (Drenaj Mühendisliği)", Atatürk Üniversitesi Yayınları, Erzurum, (1993)
2	Güngör, Y., Erözel, A., "Drainage and Land Reclamation (Drenaj ve Arazi Islahı)", Ankara Üniversitesi Ziraat Fakültesi Yayınları, Ankara, (1994)
3	Doorenbos et al., "Yield Response to Water", FAO Irrigation and Drainage Paper, N0: 33, (1986)

Week	Weekly Detailed Course Contents	
1	Theoretical	Extensive drainage study for collecting necessary data to project drainage systems and evaluation of drainage studies
2	Theoretical	Drainage criteria for soil-plant-water relationships
3	Theoretical	Drying marsh and project basis of drainage systems with open channels
4	Theoretical	Projection of drainage systems in steady and unsteady flow conditions
5	Theoretical	Choosing drain depth
6	Theoretical	Houghoudt, Donan Glower-Dumm, Kirkham, Ernst, Kirkham-Toksöz, Van Bears formulas and some figures used in determining spacing of drains-1
7	Theoretical	Houghoudt, Donan Glower-Dumm, Kirkham, Ernst, Kirkham-Toksöz, Van Bears formulas and some figures used in determining spacing of drains-2
8	Theoretical	Drawing of drainage project
9	Intermediate Exam	Midterm exam
10	Theoretical	Drawing drainage problems
11	Theoretical	Establishing of tests and technical appropriateness
12	Theoretical	Determining criteria used in draining scheme and interpretation of test results-1
13	Theoretical	Determining criteria used in draining scheme and interpretation of test results-2
14	Theoretical	Sample applications in irrigated agriculture
15	Theoretical	Application on land
16	Final Exam	Final Exam

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	3	2	70
Lecture - Practice	14	2	2	56
Midterm Examination	1	8	2	10



Final Examination	1	12	2	14
Total Workload (Hours)				150
[Total Workload (Hours) / 25*] = ECTS				6
*25 hour workload is accepted as 1 ECTS				

Learning Outcomes

1	Evaluation and understanding of drainage study for collecting necessary data (drainage studies)
2	Identify surface and subsurface drainage systems, understanding of design criteria
3	Determination of drainage criteria in drainage networks and evaluation of results
4	Monitoring and evaluation of recent developments in drainage engineering
5	To be able to analyze drainage projects, to investigate the problems and solutions and publish the results of these studies.

Programme Outcomes (Agricultural Structures and Irrigation Doctorate)

1	Ability to analyze, synthesize and evaluate different forms of scientific knowledge in the field of studies
2	Approach to information systematically, and gain skills related to their field the research methods
3	Innovative science to develop a scientific method or a method that is known to practice in their field
4	Ability to organize and manage the project and advanced scientific research
5	Advanced technologies, find solutions to engineering problems taking advantage of the software and model approaches
6	Creative, unbiased and critical thinking
7	A topic in the field of written, verbally and visually as the ability to express
8	Ability to publish in refereed journals National and international the results of studies

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	4	5	5	4	5
P2	5	5	5	5	5
P3	4	4	4	4	4
P4	4	5	4	4	5
P5	5	5	5	5	5
P6	3	4	3	3	4
P7	5	5	5	5	5
P8	5	5	5	5	5

