

# IRRIGATION AND DRAINAGE

<b>1</b>	Course Title:	IRRIGATION AND DRAINAGE	
<b>2</b>	Course Code:	BSM2502	
<b>3</b>	Type of Course:	Compulsory	
<b>4</b>	Level of Course:	First Cycle	
<b>5</b>	Year of Study:	2	
<b>6</b>	Semester:	4	
<b>7</b>	ECTS Credits Allocated:	4.00	
<b>8</b>	Theoretical (hour/week):	1.00	
<b>9</b>	Practice (hour/week):	2.00	
<b>10</b>	Laboratory (hour/week):	0	
<b>11</b>	Prerequisites:		
<b>12</b>	Language:	Turkish	
<b>13</b>	Mode of Delivery:	Face to face	
<b>14</b>	Course Coordinator:	Prof. Dr. Ali Osman Demir	
<b>15</b>	Course Lecturers:		
<b>16</b>	Contact information of the Course Coordinator:	e-posta : aodemir@uludag.edu.tr Telefon: 0 224 2941616 Adres: Uludağ Üniversitesi, Ziraat Fakültesi, Biyosistem Mühendisliği Bölümü, Görükle Kampüsü, 16059, Nilüfer/BURSA	
<b>17</b>	Website:		
<b>18</b>	Objective of the Course:	The aim of the course is to select appropriate irrigation and drainage systems and methods, and the criteria for these systems and methods for irrigation of agricultural crops and land drainage.	
<b>19</b>	Contribution of the Course to Professional Development:		
<b>20</b>	Learning Outcomes:		
		<b>1</b>	establish the relationship between irrigation and drainage
		<b>2</b>	evaluate the importance of irrigation and drainage in agriculture
		<b>3</b>	select appropriate irrigation methods and systems according to the conditions
		<b>4</b>	select the appropriate drainage systems for areas with drainage problems
		<b>5</b>	determine the criteria for the design of irrigation methods and systems
		<b>6</b>	determine the criteria for drainage systems within the framework of design principles
		<b>7</b>	list the activities for operation and maintenance of irrigation systems
		<b>8</b>	explain the path to be followed in operation and maintenance of drainage systems
		<b>9</b>	
		<b>10</b>	
<b>21</b>	Course Content:		
		<b>Course Content:</b>	
Week	Theoretical	Practice	

1	The definition and importance of irrigation, the benefits of irrigation, the history of irrigation, irrigation in the World and Turkey, irrigation method, irrigation system	
2	Soil-plant-water relationships	Calculating the soil-water parameters
3	Irrigation water demand, evapotranspiration, crop coefficient, irrigation efficiency, effective rainfall, the amount of irrigation water applied to each irrigation, irrigation interval, system capacity, determine the irrigation time	Calculation of evapotranspiration and irrigation water
4	Preparing the land for irrigation, lay out of field plots, land leveling, on-farm water distribution systems, flow measurements	Evaluation of flow measurement results
5	Irrigation methods, selection of the appropriate irrigation method, flood irrigation method, ponding irrigation method, border irrigation method, furrow irrigation method	Calculation of the parameters of surface irrigation methods
6	Sprinkler irrigation method	Calculation of sprinkler irrigation system capacity
7	Drip irrigation method	Calculation of drip irrigation system capacity
8	Mini sprinkler irrigation method, subirrigation method	Calculation of mini sprinkler irrigation system capacity
9	Repeating courses and midterm exam	
10	Irrigation water quality	Classification of irrigation water and determination of its suitability for irrigation according to the laboratory analysis
11	Operation and maintenance of irrigation systems	On-site inspection of Irrigation System of Agricultural Research and Application Center of Uludag University
12	The importance of drainage in irrigated lands, definition and benefits of drainage	
13	Drainage problems in agricultural lands, drainage surveys	Analysis of drainage survey data
14	Drainage methods, surface drainage methods, subsurface drainage methods	Determination of drainage design criteria
22	Textbooks, References and/or Other Materials:	<ol style="list-style-type: none"> <li>1. Çevik, B., "Sulama ve Drenaj" Ç.Ü. Ziraat Fakültesi Genel Yayın No:243, Ders Kitapları Yayın No:A-77, 1. Baskı, 2002, Adana</li> <li>2. Demir A. O., "Drenaj ve Arazi Islahı", U.Ü. Ziraat Fakültesi Ders Notları No: 86, 2001. Bursa</li> <li>3. Güngör, Y., Erözel, A.Z. ve Yıldırım, O., "Sulama", Ank. Ü. Zir.Fak. Yayın No:1443, Ders Kitabı:424, 1996, Ankara</li> <li>4. Skaggs, R.W. and Schilfhaarde, J. Van, "Agricultural Drainage", American Society of Agronomy, Agronomy Series Number 38, 1999, USA.</li> <li>5. FAO, "Drainage of Irrigated Lands", Irrigation Water Management Training Manual No.9, 1996, Rome</li> </ol>
23	Assesment	
<b>TERM LEARNING ACTIVITIES</b>		<b>NUMBE R</b>
Midterm Exam		1
Quiz		0
Home work-project		0
Final Exam		1
Total		2
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	1.00	14.00
Practicals/Labs	14	2.00	28.00
Self study and preperation	13	3.00	39.00
Homeworks	1	7.00	7.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	12.00	12.00
Others	0	0.00	0.00
Final Exams	1	20.00	20.00
Total Work Load			132.00
Total work load/ 30 hr			4.00
ECTS Credit of the Course			4.00

25	CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS															
	PQ1	PQ2	PQ3	PQ4	PQ5	PQ6	PQ7	PQ8	PQ9	PQ10	PQ11	PQ12	PQ13	PQ14	PQ15	PQ16
ÖK1	3	2	3	0	4	2	4	2	0	2	2	0	0	0	0	0
ÖK2	4	2	3	0	5	3	4	3	0	3	2	0	0	0	0	0
ÖK3	3	3	4	3	4	3	3	0	0	3	3	0	0	0	0	0
ÖK4	3	4	4	4	4	4	3	0	0	3	3	0	0	0	0	0
ÖK5	3	4	4	3	4	3	3	0	0	4	3	0	0	0	0	0
ÖK6	3	2	4	3	4	2	3	0	0	4	3	0	0	0	0	0
ÖK7	2	3	2	0	4	3	3	0	0	3	2	0	0	0	0	0
ÖK8	3	4	2	0	5	3	3	0	0	3	2	0	0	0	0	0
<b>LO: Learning Objectives PQ: Program Qualifications</b>																
<b>Contribution Level:</b>	<b>1 very low</b>			<b>2 low</b>			<b>3 Medium</b>			<b>4 High</b>			<b>5 Very High</b>			