AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Open Channel Hydraulics								
Course Code	MCE531		Couse Level		Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	The fundamentals of open channel hydraulics and effects of the different hydraulic structures on open channels								
Course Content	Advanced hydraulics of free surface flow in rivers and open channels; discussion of theory, analytical and numerical solution techniques, and their applications to gradually and rapidly varied nonuniform flows, unsteady flow, and flow in open-channel networks.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study, Problem Solving								
Name of Lecturer(s)									

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	30
Final Examination	1	40
Quiz	3	15
Assignment	2	15

Recommended or Required Reading	
1	Hydraulic Structures, P. Novak et. al, 2001
2	The hydraulics of open channel flow: an introduction, Chanson H., Oxford, UK. 2nd ed
3	Environmental Hydraulics of Open Channel Flows, Chanson, H., Elsevier

Week	Weekly Detailed Course Contents	
1	Theoretical	Hydraulics of Steady open-channel flows
2	Theoretical	Steady uniform flow: Chezy and Manning equations, optimal trapezoidal section, compound and heterogeneous channels, normal depth calculation in channels and sewers.
3	Theoretical	Gradually varied flows: specific energy, critical depth, critical slope, flow profiles (theory and practical calculations).
4	Theoretical	Gradually varied flows: specific energy, critical depth, critical slope, flow profiles (theory and practical calculations).
5	Theoretical	Flow in natural rivers: pseudouniform flow. Rapidly varied flow: hydraulic jump, drawn jump.
6	Theoretical	Flow in natural rivers: pseudouniform flow. Rapidly varied flow: hydraulic jump, drawn jump.
7	Theoretical	Flow in non-prismatic geometry: flow between a gate and a reservoir, change in bed slope, change in channel width, presence of bridge piers, Venturi flumes, bottom sill, broad crested weir.
8	Theoretical	Flow in non-prismatic geometry: flow between a gate and a reservoir, change in bed slope, change in channel width, presence of bridge piers, Venturi flumes, bottom sill, broad crested weir.
9	Theoretical	Weirs and spillways, Thin crested weir, normalized Creager profile, free or drawn outflow, spillways
10	Theoretical	Weirs and spillways, Thin crested weir, normalized Creager profile, free or drawn outflow, spillways
11	Theoretical	Unsteady gradually varied flow
12	Theoretical	Unsteady gradually varied flow
13	Theoretical	Unsteady rapidly varied flow
14	Theoretical	Unsteady rapidly varied flow

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	0	3	42
Assignment	2	45	1	92
Midterm Examination	3	10	1	33

Final Examination	1	31	2	33
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	Students will learn steady uniform flow
2	Students will learn gradually varied flow
3	Students will learn rapidly varied flow
4	Students will learn weirs and spillways
5	Students will learn unsteady gradually and rapidly varied flow

Programme Outcomes *(Civil Engineering (English) Master)*	
1	To be able to develop expertise knowledge in a civil engineering area founded on their graduate competence.
2	To be able to use the theoretical and practical expertise knowledge gained in their specialty area.
3	To be able to use the information, problem solving and / or practical skills from the field, in interdisciplinary studies.
4	To be able to create new knowledge by integrating their knowledge area with the knowledge coming from different disciplines; and solve problems that need expertise by using scientific research methods
5	To be able to solve the problems related to his/her area by using appropriate research methods
6	To be able to devise a problem in their specialty area, develop a solution methodology, solve the problem, and interpret the results and take action if necessary
7	To be able to criticize the knowledge in their specialty area, guide the learning process, and independently direct high level studies
8	To be able to systematically communicate the recent developments in their specialty area and their own studies to groups both inside and outside their specialty area, orally, in writing and visually
9	To be able to use computer software at a level required by their specialty area with drawing upon information and communication technology at a high level
10	To be able to introduce scientific, technological, social and cultural advancements in the field of civil engineering and to contribute to the process of being an information of the society and to sustain it.
11	To be conscious of professional and ethical responsibility and contribute to the establishment of this consciousness.
12	To be able to protect social, scientific, and ethical values during collection, interpretation, and dissemination stages of the data associated with their specialty area; instruct and supervise these values
13	To be able to use at least one foreign language in a level to follow current developments related to the field.

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	4	5	4	5
P2	4	5	4	5	4
P3	5	4	5	4	5
P4	4	5	4	5	4
P5	5	4	5	4	5
P6	4	5	4	5	4
P7	5	4	5	4	5
P8	4	5	4	5	4
P9	5	5	5	4	5
P10	5	4	4	5	4
P11	5	5	5	4	5
P12	5	4	4	5	4
P13	4	5	5	5	5