ISHIK UNIVERSITY
FACULTY OF ENGINEERING
Department of CIVIL ENGINEERING,
2018-2019 Fall
Course Information for CE 213 FLUID MECHANICS I

Course Name:	FLUID MECHANICS I

Code	Course type	Regular Semester	Theoretical	Practical	Credits	ECTS
CE 213	2	3	2	2	3	

Name of Lecturer(s)-Academic Title:	Barham Haydar - MSc kaiwan osman - MSc
Teaching Assistant:	-
Course Language:	English
Course Type:	Main
Office Hours	Sunday, 08:30 am to 12:00 2.30 --4.30
Contact Email:	barham.haydar@ishik.edu.iq kaywan.osman@ishik.edu.iq Tel:07705042603 07501704747
Teacher's academic profile:	MSc holder in construction materials 2015 -2016 as a research assistant at Ishik university-Erbil 2016 - 2018 taking a certificate of master degree in the filed of hydraulic structure.
Course Objectives:	The purpose of this class is to introduce students to the concepts of fluid mechanics. Learn to use control volume analysis, to develop basic equations and to solve fluid problems. Learn to use equations in combination with experimental data to determine fluid systems behavior. In this course experimental works are included that can help students to learn and visualize different phenomena related to fluid mechanics in a laboratory environment.
Course Description (Course overview):	: Introduction, characteristics and fluid properties units of measurements, Fluid in the case of static: the relationship between pressure and density and height, pressure gauge and absolute pressure, manometer, forces on the flat and convex surfaces and submerged applications, pressure gauge and absolute pressure, manometer, forces on the flat and convex surfaces and submerged applications, the movement of the liquid kinematic, the flow is steady and constant, the of uniform and non-uniform flow, the line of flow, the flow of a one-dimensional and two and three, velocity, acceleration, average velocity, discharge, applications, the basic laws, the equation of motion, energy equation, Euler equation, Bernoulli equation, the power line and the line hydraulic pumps, law of conservation of momentum and applications, Applications of law of conservation of momentum

COURSE CONTENT

Week	Hour	Date	Topic
1	2	2-4/10/2018	Introduction
2	2	7-11/10/2018	Introduction
3	2	14-18/10/2018	Fluid Properties
4	2	21-25/10/2018	Pressure Measurement (Manometers)
5	2	28/10-1/11/2018	Application of all types of manometers
6	2	4-8/11/2018	Static forces of horizontal and vertical surfaces
7	2	11-15/11/2018	Applications
8	2	18-22/11/2018	Midterm Exam
9	2	25-29/11/2018	Static forces of inclined surfaces
10	2	2-6/12/2018	Static forces on curved surfaces

11	2	9-13/12/2018	Pressure diagram, acting on a wall
12	2	16-20/12/2018	Water pressure on sluice and lock gate
13	2	23-24/12/2018	Water pressure on dams
14	2	2-3/1/2019	Equilibrium of floating bodies
15	2	7-10/1/2019	Energy Equation
16	2	13-17/1/2019	Final Exam
17	2	20-24/1/2019	Final Exam

COURSE/STUDENT LEARNING OUTCOMES

1	Fluid Properties
2	Pressure Measurements
3	Static Forces
4	Flow Kinematics
5	Flow Kinematics

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced)

	Program Learning Outcomes	**Cont.**
1	An ability to apply knowledge of mathematics, science, and engineering	P
2	An ability to design and conduct experiments, as well as to analyze and interpret data	P
3	An ability to design a system, component, or process to meet desired needs	I
4	An ability to identify, formulate and solve engineering problems	I
5	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice	I
6	Skills in project management and recognition of international standards and methodologies	I
7	An ability to function on multi-displinary teams	I
8	An understanding of professional and ethical responsibility	I
9	An ability to communicate effectively	I
10	The broad education necessary to understand the impact of engineering solutions in a global and social context	I
11	A recognition of the need for and ability to engage in, lifelong learning	I
12	A knowledge of contemporary issues	I

Prerequisites (Course Reading List and References):	Engineering Mechanics
Student's obligation (Special Requirements):	Students are expected to attend all lectures. Students must attend all examinations, quizzes, and practical sessions.

Weekly Laboratory/Practice Plan:

Week	**Hour**	**Date**	**Topics**
1	2	2-4/10/2018	Introduction
2	2	7-11/10/2018	Introduction
3	2	14-18/10/2018	How to write report of tests
4	2	21-25/10/2018	Safety requirements
5	2	28/10-1/11/2018	How to use hydraulic bench
6	2	4-8/11/2018	Test of hydrostatic force 1
7	2	11-15/11/2018	Test of hydrostatic force 2
8	2	18-22/11/2018	Midterm exam

	9	2	25-29/11/2018	Flow measurements by volume
	10	2	2-6/12/2018	piezometer head test on a point
	11	2	9-13/12/2018	Flow through orifice within pipe line
	12	2	16-20/12/2018	Simulation of flow measurement through circular orifice
	13	2	23-24/12/2018	Simulation of flow measurement through rectangular orifice
	14	2	2-3/1/2019	Simulation of pressure measurement by manometers 1
	15	2	7-10/1/2019	Simulation of pressure measurement by manometers 1
	16	2	13-17/1/2019	Review
	17	2	20-24/1/2019	Final Exam

Course Book/Textbook:	Bansal, R. K. (2005). A textbook of fluid mechanics and Hydraulic Machines. Firewall Media.
Other Course Materials/References:	1- Crowe, C. T., Elger, D. F., Williams, B. C., & Roberson, J. A. (2009). Engineering fluid mechanics. John Wiley & Sons, Inc, 9th ed. 2- White, F.M. (2011) Fluid Mechanics, The McGraw-Hill Companies, Inc, 7th ed.
Teaching Methods (Forms of Teaching):	Lectures, Practical Sessions, Excersises

COURSE EVALUATION CRITERIA

Method	**Quantity**	**Percentage (%)**
Attendance	1	3
Participation	1	3
Quiz	4	2.5
Homework	4	1
Midterm Exam(s)	1	30
Laboratory	1	10
Final Exam	1	40
Total		**100**

Examinations: Essay Questions, True-False, Fill in the Blanks, Multiple Choices

Extra Notes:

ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD

Activities	**Quantity**	**Duration (Hour)**	**Total Work Load**
Course Duration (Including the exam week: 16x Total course hours)	64	4	256
Hours for off-the-classroom study (Pre-study, practice)			0
Assignments Mid-terms	1	2	2
Final examination	1	2	2
Other			0
Total Workload			**260**
ECTS Credit (Total workload/25)			**10.4**

Peer review

Signature:	Signature:	Signature:
Name:	Name:	Name:
Lecturer	Head of Department	Dean