



*Prince Hussein bin Abdullah II Academy of Civil Protection  
Department of Fire Safety Engineering  
Fluid Mechanics for Fire Safety 2021102  
Second Semester 2014/2015*

**Instructor:** Dr. Yousef Mubarak

**Tel:** 535 5000 Ext. 22891

**Lectures:** Mon and Wed 8:00 – 9:30

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## *Objectives*

This course is an introduction to fluid mechanics, and emphasizes fundamental concepts and problem-solving techniques.

## *Outcomes*

Upon completion of this course, students will be able to:

1. Determine pressures and forces on submerged bodies
2. Analyze flow rates, velocities, energy losses, and momentum fluxes for fluid systems
3. Describe fluid flow phenomena
4. Analyze, design, and evaluate pumping systems and pipeline components
5. Communicate effectively with engineering graphics

## *Contents*

1. Introduction to fluid mechanics
2. Physical properties and type of fluids
3. Fluid Statics: Basic hydrostatic equation, Buoyancy and manometers
4. Bernouli's equation
5. Fluid flow measurements
6. Fluid friction in steady flow
7. Macroscopic momentum balances
8. Open channel flow
9. Dimensional analysis
10. Pumping of fluid and pump selection

## *Text*

1. Yunus A. Cengel, John M. Cimbala, Fluid Mechanics: Fundamentals and Applications, McGraw Hill Higher Education, 1<sup>st</sup> edition SI unit, 2006.

## *References*

1. Clayton T. Crowe , Donald F. Elger, John A. Roberson, Engineering Fluid Mechanics, John Wiley & Sons, Inc. USA; 8<sup>th</sup> edition, 2005
2. Noel de Nevers, Fluid Mechanics for Chemical Engineers, McGraw Hill Higher Education, 3<sup>rd</sup> edition, 2005
3. Streeter, Fluid Mechanics, 3rd edition, McGraw-Hill Book Company, INC.

### ***Assignments:***

All students are required to finish their homework assignments, and submit them on time. Late homework ***will not be accepted*** under any circumstances. Popup and announced quizzes will be given during the course. You need to come prepared to class. A hand calculator is recommended to be available in every class. Cell phones will never be allowed to substitute a calculator.

### ***Attendance Policy:***

It is expected that students will attend every lecture/discussion class. Students are responsible for the material covered in class, even if they are absent. Excessive unexcused absences may result in a lower grade, or even course failure. Please display proper decorum during class, examples of poor decorum: sleeping, using your mobile, arriving late to class, talking to neighbor, leaving during class.

### ***Makeup Policy:***

Exams will be made up only in the case of an excused emergency. Normally make up exams are much more difficult compared to the on time exams.

### ***Class Grading:***

	<b>Date</b>	<b>Marks</b>
<b>First Exam</b>	5 <sup>th</sup> week	<b>20%</b>
<b>Second Exam</b>	10 <sup>th</sup> week	<b>25%</b>
<b>H.W. and Quizzes</b>		<b>5%</b>
<b>Final Exam</b>	To be arranged later	<b>50%</b>