



**DEPARTMENT OF MECHANICAL AND INDUSTRIAL ENGINEERING
MECHANICAL ENGINEERING PROGRAM, BSC.**

Course Syllabus

- 1. Course number and name**
ME 342 Fluid Mechanics laboratory
- 2. Credits and contact hours**
(0+1) 1 credit hour, 3 contact hours
- 3. Course type**
Face to face Learning Course (3+0)
- 4. Instructor's or course coordinator's name**
Eng. Dia' A. Afaneh
- 5. Textbook information**
Fluid laboratory manual.
 - a. Other supplemental materials**
 - Yunus A. Cengel Dr., John M. Cimbala - Fluid Mechanics_ Fundamentals and Applications-McGraw-Hill Education (2017), (4th Edition).
 - Instructor's Notes
- 6. Specific course information**
 - a. Catalog description**
Performing laboratory experiments such as viscosity and density measurements, jet dispersion, venturi and orifice meter, laminar and turbulent flow, center of pressure, stability of floating body, impact of a jet, series and parallel pumps, flow in pipes.
 - b. Prerequisites or co-requisites**
Co-requisite: ME 341 fluid mechanics I .
 - c. The course is:**
Required in Mechanical Engineering Department.
- 7. Specific goals for the course**
 - a. Course outcomes:**
After completion of the course, students are expected to be able to:
 1. Measure the viscosity and density of the fluid.



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2. Visualize laminar, transitional and turbulent pipe flows and calculate Reynolds Number, and Find the energy losses due to fittings.
3. Determine the velocity distribution in the jet and calculate the related parameters.
4. Visualize the effect of hydrostatic pressure on a submerged and partially submerged rectangular plate surface.
5. Investigate the performance of pumps in series and in parallel.

b. The following student outcomes are addressed by the course:

SO-(b): an ability to design and conduct experiments, as well as to analyze and interpret data.

SO-(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

SO-(pc-2) prepare students to work professionally in thermal systems

8. Learning Outcomes and their Alignment with Program Educational Objective (PEO's), Methods of Delivery, and Assessment Methods:

Learning Outcomes	Program PEOs	Method of Delivery	Assessment Method
Course Outcomes			
Measure the viscosity and density of the fluid.	-	Experiment	Question in exam
Visualize laminar, transitional and turbulent pipe flows and calculate Reynolds Number, and Find the energy losses due to fittings.	-	Experiment	Question in exam
Determine the velocity distribution in the jet and calculate the related parameters.		Experiment	Question in exam
Visualize the effect of hydrostatic pressure on a submerged and partially submerged rectangular plate surface.	-	Experiment	Question in exam
Investigate the performance of pumps in series and in parallel.		Experiment	Question in exam
Student Outcomes			
SO-(b): an ability to design and conduct experiments, as well as to analyze and interpret data.			



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SO-(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice			
SO-(pc-2) prepare students to work professionally in thermal systems			

9. Weekly Teaching Plan

Week No.	Lecture	Topic	Method of Delivery
1	Mon (13:00–16:00)	Introduction	Experiment
2	Mon (13:00–16:00)	Fluid properties.	Experiment
3	Mon (13:00–16:00)	Center of pressure.	Experiment
4	Mon (13:00–16:00)	Manometer.	Experiment
5	Mon (13:00–16:00)	Venturi and orifice meters.	Experiment
6	Mon (13:00–16:00)	Velocity distribution out of a circular orifice.	Experiment
7	Mon (13:00–16:00)	Impact of a jet.	Experiment
8	Mon (13:00–16:00)	Midterm Exam	Exam
9	Mon (13:00–16:00)	Laminar and turbulent flow.	Experiment
10	Mon (13:00–16:00)	Friction losses.	Experiment
11	Mon (13:00–16:00)	Parallel and series pumps.	Experiment
12	Mon (13:00–16:00)	Water Hammer	Experiment
13	Mon (13:00–16:00)	Centrifugal fan.	Experiment
14	Mon (13:00–16:00)	Nozzle flow behavior test.	Experiment
15	Mon (13:00–16:00)	Final Exam	Exam



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10. Grade Distribution:

Assessment	Grade	Date
- Midterm Exam	30%	8 th Week
- Assignments	30%	
- Final Examination	40%	15 th Week

* Make-up exams will be offered for valid reasons. It may be different from regular exams