



## ABET-Course Syllabus

- 1. Course number and name:** (0915361) Chemical Engineering Lab (1)
- 2. Class schedule:** 1 Credits Hours
  - b. Office hours:** Sun., Mon, Tue., Wed., Thu. : 11:00 – 12:00
- 3. Instructor:** Prof. Khaled M. Rawajfeh, Prof Ahmad AbuYaghi, Eng Rula Mustafa .
- 4. Text book:** Lab sheets and the textbooks for Fluid Mechanics and Thermodynamics (1) and (2) courses.
- 5. Laboratory information:**
  - a. Catalog description:** Perform some experiments in fluid mechanics and heat transfer including fluid flow and pressure measurement devices, energy losses and pressure drops in pipes and fittings, heat conduction, heat convection, heat exchangers, pumps, and fans.
  - b. Prerequisite:** 0905241 Fluid Mechanics, and 0905341 Transport Phenomena (1)
  - c. Course classification:** Mandatory course in the B.Sc. program.
- 6. Specific goals of the laboratory:**

This is a practical course that is related to theories in fluid mechanics and thermodynamic sciences. Upon successful completion of this course, the student will be able to:	Chemical Engineering Program Outcomes:						
	O1	O2	O3	O4	O5	O6	O7
- Operate fluid mechanics and process heat transfer educational equipments in addition to the corresponding instrumentations according to scientific and safety procedures.							
- Verify experimentally some fluid mechanics and process heat principles.							
- Perform chemical engineering calculations related to each experiment.							
- Present the experimental findings in clear graphs/tables.							
- Interpret and discuss the physical significance of the results.							
- Compare the experimental results with the corresponding ones that are reported in literature or calculated from physical principles to explore the degree of agreement /disagreement.							
- Perform uncertainty analysis and inspect source of errors for each experiment.							
- Write a scientific report for each experiment							



**7. Laboratory Experiments:** Lab experiments will be covered through 10 (150 minutes) session according to the following distribution:

Experiment	# of sessions
1. Energy Losses in Small Bore Piping System (smooth pipe and fittings)	1
2. Determination the Characteristic Curves of Positive Displacement Pumps	1
3. Comparative Fluid Flow Measurement	1
4. The Performance of Radial Fan	1
5. Shell and Tube Heat Exchanger	1
6. Concentric tube Heat Exchanger	1
7. Heat Conduction	1
8. Fluidized Bed Heat Transfer Unit	1
9. Free and Forced Convection	1
10.Reynolds Number	1
11.Pressure gauge calibration	1
12.Measurement of Velocity Profile for Flow of Air in a Pipe Using Pitot Tube Assembly	1

### 8. Policies and procedures:

**Attendance.** Students are expected to attend all lab sessions and they are responsible for all material, announcements, and schedule changes discussed in the session. University regulations will be imposed regarding attendance.

**Lateness.** Coming late to the laboratory is disruptive and may be treated as an unexcused absence.

**Laboratory Safety:** for safety, it is necessary to bring and wear your laboratory coat while doing experiments. The students must observe all safety requirements in the lab including wearing goggles and gloves if necessary.

**Reports:** Students must submit a report for a selected experiment which includes cover page, abstract, table of contents, introduction, theory, and experimental methods results and discussion, conclusions and recommendation, and list of references. Reports for other experiments must be submitted including results, discussion, conclusions and recommendation, and list of references. All cases of academic dishonesty will be handled in accordance with university policies and regulations. All reports must be submitted in time. Late reports will not be accepted.

**Teamwork.** Each experiment will be performed by a group of students according to the announced schedule. Each member of the group should be familiar with all issues correspond to each experiments.

**Computer skills:** You are encouraged to use computer softwares such as excel, Matlab, or Polymath to perform the required computations and to represent your findings in a graphs or tables.

#### Assessment Policy:

- Midterm examination:	20%
- Short reports:	20%
- Long report:	10%
- Course Assessment	10%
- Final examination	40%