

CME 318 Fluid Mechanics (Required)

Course Instructor: *Dr. William Calvo*

Website: none

Course Goals:

Introduction to fluid mechanics, dynamics of fluids in motion; laminar and turbulent flow, Bernoulli's equation, friction in conduits; flow through fixed and fluidized beds. Study of pump and compressor performance and fluid metering devices. Introduction of micro fluidics [3 credits]

Pre- or Corequisite(s): AMS 261 or MAT 203 or MAT 205; PHY 131 or PHY 141 or PHY 125

Text(s): *W.L. McCabe, J.C. Smith, P. Harriott, Unit Operations of Chemical Engineering, 6th ed., McGraw Hill, 2001*

Class/ Laboratory Schedule:

Fall: Lecture, Monday, 6:20-9:10 pm

Topics Covered:

Week 1: Introduction and overview of Fluid Statics

Week 2: Fundamentals of fluid flow

Week 3: Continuity, momentum and energy equations

Week 4: Incompressible fluid flow in conduits,

Week 5: Compressible fluid flow

Week 6: Flow through packed beds

Week 7: Review and Mid-term

Week 8: Discussion of Computer Programming project, Design project assigned

Week 9: Intro to micro-fluidics

Week 10: Particle settling in fluids

Week 11: Pumps and compressors

Week 12: Fluid metering techniques

Week 13: Agitation and mixing of fluids

Week 14: Oral presentation of design project, mock job interview

Week 15: Review, for final design project reports due, portfolio collection

Contribution of course to meet professional component:

Relationship of course to program outcomes:

CTPC "3a-k" Outcomes	% contribution
A. Ability to apply knowledge of math, engineering, and science	22%
B. Ability to design and conduct experiments	22%
C. Ability to design system, component or process to meet needs	23%
D. Ability to function on multi-disciplinary teams	
E. Ability to identify, formulate, and solve engineering problems	22%
F. Understanding of professional and ethical responsibility	3%
G. Ability to communicate effectively	2%
H. Broad education	2%
I. Recognition of need and ability to engage in life-long learning	2%
J. Knowledge of contemporary issues	2%
K. Ability to use techniques, skills, and tools in engineering practice	
Any other outcomes and assessments?	
	100%

Prepared by _____

Date Prepared: _____