

**ENVE 300 Mechanics of Fluids**

**Credit Hours: 4**

**Department: Mathematics, Physics and Engineering**

**Required or Elective (circle one)**

**Current Catalog Description:**

Mechanics of Fluids. (3-3) Principles of hydrostatics, dynamics of viscous and non-viscous fluids, resistance to flow in pipes and open channels, transport processes, energy equation, Bernoulli equation, conservation of mass, conservation of momentum. Credit for both HYDR 300 and ENVE 300 will not be awarded. Prerequisite: PHYS 122, MATH 209. Lab fee \$10. Course fee \$10.

**Course Schedule:**

3 lecture hr/ wk, 3. lab hr/week

**Textbook(s):**

**Coordinator:**

Name: Dr. Xixi Wang, P.E.  
office: 111 HYEG  
office hours:

email: xwang@tarleton.edu  
phone: (254) 968 - 9164

**Course Web Page:**

**Pre/corequisites by Topic: (list course number, title, and specify if co-requisite)**

PHYS 122 – Principles of Physics I  
MATH 209 – Calculus II

**Course Grading:**

**Program Outcome and Course Learning Goals Map:**

The Program Outcomes for Environmental Engineering are:

- A. an ability to apply knowledge of math, engineering & science
- B. an ability to design and conduct experiments, as well as to analyze and interpret data
- C. an ability to design system, component or process to meet needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- D. an ability to function on multi-disciplinary teams
- E. an ability to identify, formulate, and solve engineering problems
- F. an understanding of professional and ethical responsibility
- G. an ability to communicate effectively
- H. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- I. a recognition of need for, and ability to engage in life-long learning
- J. a knowledge of contemporary issues
- K. an ability to use techniques, skills, and modern engineering tools necessary for engineering practice.
- L. a depth and breadth of knowledge in engineering and physics necessary to work in a multidisciplinary environment

<b>Course Goals</b> Upon completion of this course with a C or better, students will	<b>Program Outcome(s):</b>
1. Learn the principles and engineering applications of fluid mechanics	A, B, E, G, I, K, L
2. Learn how to apply the three laws (mass conservation, energy conservation, and momentum conservation) to solve engineering problems	A, B, E, G, I, K, L
3. Learn hydrostatics, dynamics of viscous and non-viscous fluids, and resistance to flow in pipe and open channels	A, B, E, L
4. Learn the concepts of pore pressure, stress, effective stress, consolidation, and compressibility	A, B, E
5. Understand two important hydraulic machineries: pump and turbine	A, E, K
6. Gain the basic skills to use laboratory experiments to visualize hydraulic phenomena and determine common hydraulic parameters	A, B, K

**Topics (optional section of syllabus):**

<b>Topic</b>	<b># Lec/Lab (approx.)</b>

**Contribution of Course to Meeting the Professional Requirement:**

Math and Basic Sciences: 30%

Engineering Topics: 70%

General Education: 0%

Other: 0%

**Other Information:**

**Class policies:**

**Exams:**

**Homework/Quizzes/Classwork:**

**Projects:**

**Absence policy:**

**Unexcused absences:** Students who miss class without prior approval of their instructor will receive a grade of zero on missed in class assignments, quizzes, and/or exams.

**University excused absences:** Authorized absences must be approved by your instructor in advance of the absence, unless you have an emergency or illness, which still must be approved *immediately* upon your return. Make-up work must be completed outside of normal class hours within ONE WEEK following an excused absence. IT IS YOUR RESPONSIBILITY to see your instructor and make arrangements for make-up work.

**Academic Honesty:**

Cheating, plagiarism (submitting another person's materials or ideas as one's own), or doing work for another person who will receive academic credit are all-impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an examination, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were the student's own work. Disciplinary action may be taken beyond the academic discipline administered by the faculty member who teaches the course in which the cheating took place.

**Students with Disabilities Policy:**

It is the policy of Tarleton State University to comply with the Americans with Disabilities Act (ADA) and other federal, state, and local laws relative to the provision of disability services. Students with disabilities attending Tarleton State University may contact the Office of Disability Services at (254) 968-9478 to request appropriate accommodation. Furthermore, formal accommodation requests cannot be made until the student has been officially admitted to Tarleton State University.

**Status of Continuous Improvement Review of this Course:**

**Prepared by:** *Xixi Wang*

**Date:** *March 15, 2008*

**Reviewed by:** *Xixi Wang*

**Date:** *March 15, 2008*