

CLASS TIME: 9:00 - 9:50 M, T, W & F **RM:** PS 214

Instructor ARDELL KNUDSON PS 211 **Ph:** 268-2248

OFFICE HOURS: M - R 10 – 11; M & W 11 - 12 & 1 - 2 Or by appointment.

Description: The course consists of basic fluid properties, fluid statics, and the flow of fluids. There will be work with pipe flow, pumps, compressible flow, as well as an introduction to the topics of drag and lift.

Prerequisites: Math 2210 Calculus III, Physics I, ES 2120 Dynamics or Instructor Permission

Objectives:

Students should develop a good basis in the areas of fluid properties and the flow of fluids. There will be study of power machinery, pipe flow, turbines, pumps, and bodies immersed in fluids. (Vehicles, balls, and aircraft). This will give a person a general background or a starting point for further work in hydraulics or gas dynamics.

Outcomes: Upon completion of this course, a person should be familiar with the following concepts:

- fluid properties
- forces on objects submerged in fluids
- Bernoulli's theorem
- pump fundamentals
- drag
- lift

Methodology: The material will be presented in lecture format with an emphasis on discussion and problem solving. There will be a significant use of practical applications and the students will be given some design problems involving piping installations.

EVALUATION CRITERIA:

There will be homework assignments, exams, quizzes and some special projects including presentations and design work. Tentative evaluation will be based on:

Exams	40%
Homework	15%
Quizzes	20%
Final	25%

Homework will be submitted on a weekly basis and will be docked 20% per day late.

Exams will be taken as scheduled unless prior arrangements are made.

REQUIRED TEXT, READINGS, MATERIALS:

Fluid Mechanics 6th ed by Munson, Young, & Okiishi Wiley Pub

(Note: The edition of the text will not matter, problems will be assigned.)

LAST DATE TO CHANGE TO AUDIT STATUS OR TO WITHDRAW WITH A "W" GRADE:

Thursday, Nov 12th, 2015 at 5:00 p.m. No exceptions.

STUDENT RIGHTS & RESPONSIBILITIES:

Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities. Students are expected to behave in a professional manner with regard to usage of any electronic instruments during class if the use of these devices is not related to course content.

CHAIN OF COMMAND:

If there are any problems with this class, first contact the instructor and attempt to solve the problem. If not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head, the Dean of the School of Science, and lastly the Vice President for Academic Affairs.

ACADEMIC DISHONESTY:

Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty with the academic process can result in the offending person failing the course in which the offense was committed or may result in expulsion from the school. See the Casper College student Code of Conduct for more information on this topic.

OFFICIAL MEANS OF COMMUNICATION:

Casper College faculty and staff will employ the student's assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly.

ADA ACCOMODATIONS POLICY;

If you need academic accommodations because of a disability, please inform the instructor as soon as possible. To request academic accommodations, students must first consult with the college's Disability Services Counselor located in the Gateway Building, Room 344, ph (307) 268 2557, bheuer@caseprcollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by the students requesting accommodations. The Counselor will determine eligibility for accommodations and assist students in requesting and using appropriate accommodations.

<u>WEEK</u>	<u>SECTION</u>	<u>TOPICS</u>	<u>ASSIGNMENT</u>
Aug 24 Week 1	1.1 – 5 1.6 – 7 1.8 – 9	Intro, Units, Dim Viscosity Vapor Pressure	Assign # 1
Aug 31 Week 2	2.1 – 3 2.4 – 5 2.6 – 7	Pressure Std Atmosphere Manometry	Assign # 2
Sept 8 Week 3	2.8 – 9 2.10 2.11-12	Force on a surface Force on a curved surf Buoyancy	Assign # 3
	Review	Exam I	
Sept 14 Week 4	3.1 – 5 3.6 – 7	Static, Stagnation Pr Bernoulli Equation	Assign # 4

Sept 21 Week 5	4.1 – 5 5.1	Reynolds Transport Thm Cons of Mass	Assign # 5
Sept 28 Week 6	5.2 - 3	Energy Eqn Applications	Ch 5 # 76, 86, 90 Special problems
Oct 5 Wk 7		Review of material Exam II	
Oct 12 Wk 8	6.1 – 2	Differential Analysis	Special Problems
		Fall Break Oct 19 - 20	
Oct 22 Week 9	7.1 – 2 7.3	Buckingham Pi Pi Parameters	7.1, 3, 6 7.9, 13, 17
Oct 26 Wk 10	8.1 – 2 8.3 8.4	Laminar flow Turbulent flow Moody chart	8.10, 11, 12 8.13, 19, 20 8.21, 28, 30
Nov 2 Wk 11	8.4	Piping systems Valves and fittings Centrifugal pumps	8.33, 43, 44 50, 51*, 62*, 63*
Nov 9 Wk 12	9.1 9.2	Flow over immersed bodies Boundary layer Drag	9. 26, 27, 28, 32* 9.37*, 45*, 51*, 54* Special problems
Nov 16 Week 13		Review Exam IV	
Nov 23 Wk 14	10.1 10.4	Open channel flow Manning equation	10.13, 20*, 37, 39 Special problems
		Thanksgiving holiday Nov 25 - 27	
Nov 30 Wk 15		Presentations Review	
Dec 7 Wk 16		Presentations Review	
		Final exam	