



University of North Texas
College Engineering
Engineering Technology Department
MEET 3940
Fluid Mechanics Applications

Welcome! My name is Professor/Doctor Maurizio Manzo and I am Assistant Professor in the Engineering Technology Department. I am happy to welcome you, dear students, to the Fluid Mechanics world.

Instructor Contact

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M&F 9:00-10:00 AM, W 3:00- 4:00 PM or by appointment*

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Course Description

Study of incompressible fluid mechanics, including pressure, force and velocity; hydraulic fluid power circuits and systems as used in industrial applications.

Pre-requisites

ENGR 2302.

Course Objectives (ETAC of ABET Criteria and Program Educational Objectives Supported).

By the end of this course, students will be able to:

- 1. Identify fluid properties and forces exerted by fluids (ABET 1).*
- 2. Describe the different types fluid flow (laminar and turbulent) and types of hydraulic systems (series and parallel) (ABET 1).*
- 3. Calculate pressure and forces in general in static fluid; calculate Reynolds number and losses in fluid systems (ABET 2, 3, 5).*
- 4. Predict the behavior of a fluid system based on the Bernoulli, continuity, and general energy equations (ABET 1, 2, 3).*
- 5. Select the right tabulated experimental data to solve practical problems (ABET 1, 2, 5).*
- 6. Be able to perform measurements in a lab environment and use fluid mechanics commercial software packages (ABET 2, 3, 4).*

Required Materials

*Textbook: Robert L. Mott and Joseph A. Untener, "Applied Fluid Mechanics", 7th Edition
Prentice Hall, ISBN-9780132558921.*

Software usage: Hydroflow

Technical Support

Student Helpdesk:

UIT Helpdesk
Sage Hall 130
940-565-2324
helpdesk@unt.edu

Technical Skill Requirements

Add information on any technical skills that students will need in order to be successful in the course. For example, downloading and uploading files, sending and receiving emails, or using Blackboard. Some specialized courses may require students to have skills in specific software (for example, SPSS, or SQL). Be sure to list as much information here as possible so that students will know if there are skills they need to brush up on before the course begins.

Netiquette

All course material will be posted on Canvas. HW will be posted on Canvas. Course announcement and email through Canvas will be used to communicate with the students. All graded HW and exam will be posted on Canvas.

Course Requirements

Assignment	Percentage of Final Grade
Quiz & Attendance	10%
Homework	5%
Exam I	15%
Exam II	15%
Exam II	15%
Laboratory assignments	40%
Final	15%
Total Points Possible	115%

The lowest grade among the Exams 1, 2, and 3 will be dropped.
It is your responsibility to attend the exams.

Grading

Letter grades will be based on following scale:

A: 90-100%; B: 80-89%; C: 70-79%; D: 60-69%; F: < 60%.

No late HW is accepted.

Make-up exams may be granted for excused (i.e. official university) absences. The lowest exam grade will be dropped.

Course Expectations

As the instructor in this course, I am responsible for

- *providing course materials that will assist and enhance your achievement of the stated course goals, guidance,*
- *providing timely and helpful feedback within the stated guidelines,*
- *and, assisting in maintaining a positive learning environment for everyone.*

As a student in this course, you are responsible for

- *reading and completing all requirements of the course in a timely manner,*
- *working to remain attentive and engaged in the course and interact with your fellow students,*
- *and, assisting in maintaining a positive learning environment for everyone.*

Policies

Homework assignment should be handed in the class during class time a week later. **No late homework** unless pre-approved and/or under special circumstances. No any late homework will be accepted unless supported by an official university policy excuse.

1. *Attendance: Attendance is mandatory. Lectures, videos, and class discussions will contain vital information needed to do well on the exams. Be on time, three "late" arrivals will result in one "nonattendance".*
2. *Six "non-attendance" will result to a drop from the course.*
3. *Tardiness: If you arrive late, please enter quietly and sit down. Do not walk in front of speakers or disrupt the class in any other way.*
4. *Cell Phones: Please remember to turn off phones prior to class.*
5. *The course website, Blackboard Learn, at learn.unt.edu may be used for posting course materials, assignments, and grades, as well as for email communications. Students are encouraged to check the course website often.*
6. *Students will complete regularly assigned homework. Homework have to be submitted on time by the following week for grading. Late submissions will get zero grade. Hw are handed in class by hand from each individual student. No excuse.*
7. *This course provides opportunities for students to take advantage of several software packages supported by the department in the classroom in simulation studies, homework assignments, or in projects.*
8. *There will be no make-up exams or assignments unless you have a documented university excused absence. If you know in advance that you will miss an exam, you must contact instructor before the scheduled exam.*
9. *This syllabus is subject to change at any time during the semester with changes to be announced in class.*
10. *The instructor reserves the right to change the grade distribution at the end of the semester. If any changes occur, the changes will be less stringent than the distribution above.*
11. *All rules relating to academic dishonesty will be enforced in accordance with University policies. Cheating on examinations and laboratory assignments, and plagiarism on various papers and reports are types of disciplinary misconduct for which penalties are assessed under the UNT Code of Student Conduct and Discipline. Major responsibility for implementing the University's policy on scholastic dishonesty rests with the faculty. Be advised that the instructor of this course supports and fully*

- implements this policy. The following actions will be taken when evidence of such misconduct is observed. The student will be presented with the evidence of misconduct and given an opportunity to explain the same. Based on the outcome of this private conference, the matter will be either dropped or the student will be given a grade of "F" in the course and be referred to the Dean of Students for further counseling and/or disciplinary action.*
- 12. Students are responsible to protect their work so it is not available to others for submission as their efforts. This is especially true of files that are generated on the computer. Students who knowingly allow others to use their work are partners in this unethical behavior.*
 - 13. An I (incomplete) grade is given only for extenuating circumstances and in accordance with University and Departmental Policies.*
 - 14. Discussion and exchange of ideas are important parts of the learning process and I encourage collaboration in a community of scholars. However, you must be sure the work you submit for grading is your own. Submitted works that are copies from solution manuals or website solutions or your classmates will be treated as plagiarism.*
 - 15. Grades are based in part on the student's ability to communicate. You must present your entire solution in an orderly way for each problem. Full grade points will be assigned only on the correct final answers with correct steps. You must show complete process of your solution. Partial credits will be assigned for correct steps taken towards the solution.*
 - 16. Requests for the review of a graded exam/assignment must be made within one week of the grade announcement. Upon review, the exam/assignment score may increase, remain the same, or decrease.*
 - 17. The Student Perception of Teaching (SPOT) Evaluation is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SPOT to be an important part of your participation in this class.*

Academic Integrity: <https://deanofstudents.unt.edu/academic-integrity>

ADA Policy

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Office of Disability Accommodation website at <http://disability.unt.edu/>. You may also contact them by phone at [940.565.4323](tel:940.565.4323).

Important Notice for F-1 Students taking Distance Education Courses**Federal Regulation**

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the Electronic Code of Federal Regulations website at <http://www.ecfr.gov/>. The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

- (1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.
- (2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Calendar

Week	Date	Lecture	Lab
1	8/28-8/30	Syllabus discussion and introduction to fluid mechanics and hydraulics	Introduction to Experimental Measurements

2	9/4-9/6	Viscosity of fluid	Same as previous-second group
3	9/11-9/14	Pressure measurement	Fluid Properties
4	9/18-9/20	Forces due to static fluids	Same as previous-second group
5	9/18-9/20	Continuity equation, Bernoulli's equation	Pressure measurements
6	9/25-9/27	Exam 1	Same as previous-second group
7	10/2-10/4	General energy equation	Flow over Airfoil-FLUENT
8	10/9-10/11	Reynold's Number, Major losses	Velocity Measurement in Wind Tunnel
9	10/16-10/18	Forces due to fluids in motion, Drag and Lift	Same as previous-second group
10	10/23-10/25	Exam 2	Drag and pressure Measurements in a Wind Tunnel
11	10/30-11/1	Series pipeline systems	Same as previous-second group
12	11/6-11/8	Parallel pipeline systems	Hydroflow 1
13	11/13-11/15	Pump selection	Hydroflow 2
14	11/20-11/22	Exam 3	Buoyancy and stability/
15	11/27-11/29	Pump selection	Thanksgiving holyday
16	12/4	Recap.	No lab
	12/9	Final Exam 8-10AM	