CEE4200A – Hydraulic Engineering Syllabus

Hydraulic Engineering, section A, 3.0 credit-hr

Spring 2027

Instructor Information

Instructor: Dr. Chung Kei Chris LAI

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General Course Information

Description

The objective of this course is to introduce the physics of fluid flow in a broad range of situations encountered by civil engineers.

Course Learning Outcomes

Specifically, this course will help students:

- Understand the phenomenon of steady flowing fluid in pipes, ducts, pumps, turbines, and open channels;
- Apply control volume analysis to solve for fluid velocity, pressure, external force, and energy of a steady flow; and
- Develop a strong intuition of the flow physics of flows relevant to the civil engineer.

Required Course Materials

Our primary textbook is:

Munson, Young and Okiishi's Fundamental of Fluid Mechanics, 2020. Ninth Ed., Wiley, 800pp.

Any previous editions of Munson will work as well. This same textbook was used in CEE3040B Fluid Mechanics – the prerequisite for this class.

Grading Policy:

Your final grade will be calculated as follows:

Bi-weekly homework (20%, five in total)

Bi-weekly quizzes (16%, six in total)

Lab report (20%, five in total)

Exams (22% each, two in total): Mid-term exam is scheduled on 3/1/2027 and Final exam on 4/30/2027

Your final grade will be assigned according to your weighted score x calculated from all graded components: $x \geq 90, A; 80 \leq x < 90, B; 70 \leq x < 80, C; 60 \leq x < 70, D; below\ 60, F$

Description of Graded Components

Five hands-on laboratory experiments: (1) jet, (2) oil flow in pipe, (3) centrifugal pump, (4) falling spheres, and (5) hydraulic jump.

Three lab sections: A1 (Tuesdays 12:30pm-3:15pm), A2 (Tuesdays 3:30pm-6:15pm) and A3 (Thursdays 3:30pm-6:15pm).

Please ONLY go to your registered lab section. Also, please wear long pants and closed-toe shoes to the lab sections. You will not be allowed inside the lab area if proper attire is missing.

Course Policies

Attendance and/or Participation

Dr. Lai tries his best to create a stimulating and engaging environment for students in his class. However, this is not a one-sided job and students' active participation is crucial to the success of our classroom teaching/learning.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Pre- &/or Co-Requisites

CEE 3040 Fluid Mechanics is the pre-requisite for this class. Students are expected to be familiar with control volume analysis.

Collaboration, Group Work, and Use of Generative AI

Students are encouraged to frequently discuss materials taught in class among themselves and to work on difficult homework problems together. However, the final submitted work must be based on individual effort. The use of AI tools is prohibited in this class.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

If you unfortunately become ill and therefore cannot submit your homework on time or take exams as scheduled, I will work with you to devise a plan so that you can complete these requirements. This can be an extension of submission deadline or a reschedule. Because everyone's situation is unique, I cannot be more specific at this time. I am, however, committed to your learning experiences and success in this class. The work submitted by students granted with an extension will be held to the same academic standard as everyone else's. If you fail to submit your work on/before the extended deadline, that work will receive a zero mark. Only the exceptions defined by Georgia Tech (http://www.catalog.gatech.edu/rules/4/) are accepted as valid reasons for deadline extensions and rescheduling of exams.

Inclement Weather and Digital Learning Days

If GT campus is officially declared closed due to extreme weather, students should stay home. Dr. Lai will create a make-up class video and post it on CANVAS for students to watch after the event.

Student Use of Mobile Devices in the Classroom

Students are expected to pay full attention to class, and no use of mobile devices is allowed. In the case of emergence, please step outside the classroom and take your calls there.

Campus Resources for Students

Undergraduate Student Academic Success Resources:

- Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions,

stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.

Student Well-Being:

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being (student-resource-guide (gatech.edu)