



*We acknowledge and respect the Ləkʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Ləkʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.*

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## **COURSE OUTLINE**

### **Fluid Mechanics**

**TWF 11:30-12:30, in person, Bob Wright B121; Lab demos TBA**

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**PREREQUISITES:** One of Phy 217 or Phy 317 (Thermodynamics); All of Phy 248 (Computational Physics), Phy 321A (Classical Mechanics)

**COREQUISITES:** Math 346 (Introduction to Partial Differential Equations)

### **CONTACT INFO:**

**Website:** <https://jklymak.github.io/Phy426/>

<b>Instructor(s):</b>	<b>Jody Klymak</b>
<b>Email:</b>	<b>jklymak@uvic.ca</b>
<b>Office:</b>	<b>BWC A313</b>
<b>Office Hours:</b>	<b>Hours by Appt</b>
<b>Lab Coordinator:</b>	<b>Andrew McRae</b>
	<b>macrae@uvic.ca</b>

## **COURSE DESCRIPTION**

Introductory Fluid Mechanics with a focus on applied natural world problems, including hydraulic flow over a weir in a channel, surface wave dynamics, lift due to flow over an airfoil, and onset of instabilities that lead to turbulence.

### **LEARNING OUTCOMES**

- Improved ability to linearize and simplify problems using scaling laws
- Better appreciation of exploring parameter space for complex phenomena
- Improved ability to create and analyse numerical simulations
- Practice demonstrating and explaining phenomena to classmates.

### **COURSE MATERIALS**

Largely *Kundu and Cohen* Latest edition, but also see [Texts](#) on class website.

## EVALUATION

- 10% Class participation and attendance
  - 40% [Assignments and Readings](#);
  - 25% [Student-led Laboratory Demonstrations](#);
  - 25% Take-home Final Exam
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## COURSE POLICIES

### POLICY: CLASS CONDUCT

Class conduct should be professional and create a positive learning environment for all students. Please see <https://www.uvic.ca/students/student-life/student-conduct-and-policies/index.php> for UVic's policies.

### POLICY: LATE/MISSED ASSIGNMENTS OR EXAMINATIONS

Please contact the instructor as soon as possible if you will be unable to make an assignment due date. Material turned in late will have a 10% per day (including weekends) penalty assessed, unless otherwise noted.

### POLICY: ATTENDANCE

Attendance is strongly encouraged, and there is a class participation grade to reflect this. "Class participation" doesn't necessarily mean that you are expected to speak up all the time, but demonstrating interest and perseverance with the course material is always appreciated.

### POLICY: ACADEMIC INTEGRITY

It is every student's responsibility to be aware of the university's policies on academic integrity, including policies on **cheating, plagiarism, unauthorized use of an editor, multiple submission, and aiding others to cheat.**

**Policy on Academic Integrity:** [web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html](http://web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html)

If you have any questions or doubts, talk to me, your course instructor. For more information, see [uvic.ca/learningandteaching/cac](http://uvic.ca/learningandteaching/cac).

That said, students are encouraged to work together on their problem sets so long as the material turned in for a grade is in their own words, and ideally understood by everyone making a submission.

### POLICY: USE OF AI

AI is a fine crutch, like a spell checker or a grammar checker. It is not good at writing prose from nothing and often will lead to poor written outcomes if you are not careful. Use at your peril.

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## COURSE FEEDBACK

I value your feedback on this course. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous survey regarding your learning experience (CES). **The survey is vital for providing feedback** to me regarding the course and my teaching, as well as to help the department improve the overall

program for students in the future. The survey is accessed online and can be done on your laptop, tablet, or mobile device. I will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course.

Further, I'm always happy to hear from you how the course is going during the semester.

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## COURSE SCHEDULE

UVic Important Dates - [uvic.ca/calendar/dates/](http://uvic.ca/calendar/dates/)

*Last day to add courses:* January 22<sup>nd</sup>

*Last day to drop a course without penalty of failure:* February 28<sup>th</sup>

See <https://jklymak.github.io/Phy426/> for course schedule.

### CHANGES DUE TO UNFORESEEN CIRCUMSTANCES

The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances. In the event of significant changes, a revised outline will be posted/circulated.

## APPENDIX

### Physics and Astronomy Info

- P&A Website: [uvic.ca/physics](http://uvic.ca/physics)

### UNIVERSITY STATEMENTS & POLICIES

- Academic Calendar: [Information for All Students](#)
- [Creating a respectful, inclusive, and productive learning environment](#)
- [Accommodation of Religious Observance](#)
- [Accommodation and Access for Students with Disabilities](#)
- [Student Conduct](#)
- [Non-academic Student Misconduct](#)
- [Accessibility](#)
- [Diversity / EDI](#)
- [Equity statement](#)
- [Sexualized Violence Prevention and Response](#)
- [Discrimination and Harassment Policy](#)

### UVIC GRADING SYSTEM

As per the Academic Calendar:

Grade	Grade point value	Grade scale	Description
<b>A+</b> <b>A</b> <b>A-</b>	9 8 7	90-100% 85-89% 80-84%	<b>Exceptional, outstanding and excellent</b> performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter.
<b>B+</b> <b>B</b> <b>B-</b>	6 5 4	77-79% 73-76% 70-72%	<b>Very good, good and solid</b> performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one area balanced with satisfactory grasp in the other area.
<b>C+</b> <b>C</b>	3 2	65-69% 60-64%	<b>Satisfactory, or minimally satisfactory.</b> These grades indicate a satisfactory performance and knowledge of the subject matter.
<b>D</b>	1	50-59%	<b>Marginal</b> Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.
<b>F</b>	0	0-49%	<b>Unsatisfactory</b> performance. Wrote final examination and completed course requirements; no supplemental.
<b>N</b>	0	0-49%	Did not write examination or complete course requirements by the end of term or session; no supplemental.

### STUDENT RESOURCES

#### POSITIVITY AND SAFETY

The University of Victoria is committed to promoting, providing, and protecting a positive and safe learning and working environment for all its members.

[Student Groups & Resources](#)

#### ACADEMIC RESOURCES

UVic Library - *UVic Library offers many services and resources for undergraduate and graduate students.*  
[uvic.ca/students/academics/library-services](http://uvic.ca/students/academics/library-services)

Learning Resources - *UVic Learn Anywhere is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.*  
[onlineacademiccommunity.uvic.ca/uviclearn](http://onlineacademiccommunity.uvic.ca/uviclearn)

Centre for Academic Communication - *Offers online and in-person one-on-one tutorials, workshops, and more.*  
[uvic.ca/learningandteaching/cac](http://uvic.ca/learningandteaching/cac)

Math & Stats Assistance Centre - *Offers drop-in, face-to-face tutoring and a friendly, collaborative study space for 100- and 200-level math and stats courses.*  
[uvic.ca/science/math-statistics/current-students/undergraduate/msac](http://uvic.ca/science/math-statistics/current-students/undergraduate/msac)

## **MENTAL HEALTH & WELLNESS**

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep, and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

Student Wellness Centre - *Our team of practitioners offers a variety of services to support students' mental, physical, and spiritual health.* [uvic.ca/student-wellness](http://uvic.ca/student-wellness)

Counselling Services - *Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students.* [uvic.ca/services/counselling/](http://uvic.ca/services/counselling/)

Health Services - *University Health Services (UHS) provides a full-service primary health clinic for students and coordinates healthy student and campus initiatives.* [uvic.ca/services/health/](http://uvic.ca/services/health/)

## **ACCESSIBILITY**

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability or health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL) as soon as possible.

Centre for Accessible Learning - *The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.* [uvic.ca/services/cal/](http://uvic.ca/services/cal/)

## **ADVISING**

For academic advising-related questions, students are encouraged to meet with the Academic Advising Centre early in their studies to help map out a plan to declare a major and complete university program requirements.

Academic Advising Centre - *Academic advice and support is currently available by phone, email and virtual or in-person appointments.* [uvic.ca/services/advising](http://uvic.ca/services/advising)

Ombudsperson - *The ombuds office is an independent, impartial, and confidential resource for undergraduate and graduate students and other members of the University of Victoria community. The ombudsperson helps resolve student problems or disputes fairly.* [uvicombudsperson.ca](http://uvicombudsperson.ca)

## **ACADEMIC CONCESSION**

You can request an academic concession if your course requirements are affected by unexpected and unavoidable circumstances, or conflicting responsibilities. Concession requests can be for an in-course extension, deferral,

withdrawal under extenuating circumstances, or an aegrotat. Please speak to an advisor at the Academic Advising Centre if you have questions on how requesting a concession will affect your academic program.

Undergraduate Academic Concessions - [uvic.ca/students/academics/academic-concessions-accommodations/request-for-academic-concession/index.php](http://uvic.ca/students/academics/academic-concessions-accommodations/request-for-academic-concession/index.php)

## **EQUITY AND HUMAN RIGHTS AT UVIC**

EQHR is a resource for students, staff, and faculty who have experienced sexualized violence, discrimination, and/or harassment and are looking for informal and/or formal resolution options as well as advice, coaching, and/or education. We are available for confidential consultations so that you can ask questions and learn your options.

EQHR – By email at [eqhr01@uvic.ca](mailto:eqhr01@uvic.ca) or in-person (Sedgewick C115). [uvic.ca/equity](http://uvic.ca/equity)

Sexualized Violence Resource Office – *If you have been directly or indirectly impacted by sexualized violence, reach out to the SVRO for information, advice, resolution options (restorative and disciplinary) as well as support options and referrals. The SVRO is both survivor-centred and trauma-informed in their approach. You can reach us by phone at [250-721-8021](tel:250-721-8021) or by email at [eqhr01@uvic.ca](mailto:eqhr01@uvic.ca) to book either an in-person (Sedgewick C119) or online appointment.* [uvic.ca/svp](http://uvic.ca/svp)

## **RESOURCES FOR INTERNATIONAL STUDENTS**

International Centre for Students - *The primary office supporting international students on campus at the university-wide level.* [uvic.ca/international-experiences](http://uvic.ca/international-experiences)

UVic Global Community Initiative - *Provides various supportive programming, including a Mentorship Program and Conversation Partner Program.* [uvic.ca/international-experiences/get-involved/uvic-global-community](http://uvic.ca/international-experiences/get-involved/uvic-global-community)

## **RESOURCES FOR INDIGENOUS STUDENTS**

Indigenous Student Support - *UVic offers holistic services to Indigenous students throughout their academic journey.* [uvic.ca/students/info-for/indigenous-students](http://uvic.ca/students/info-for/indigenous-students)

Elders in Residence - *The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty, and administration in Indigenous ways of knowing and being.* [uvic.ca/services/indigenous/students/programming/elders](http://uvic.ca/services/indigenous/students/programming/elders)