Physics 111 - Class 1A
Introductions

September 7, 2022

Introductions!

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Lecturer

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Biography

I am a Lecturer in the Computer Science, Mathematics, Physics, and Statistics department at the University of British Columbia Okanagan. I received my PhD in Physics from the Reinsberg lab in 2019 where among other things, I developed a new MRI technique to assess the oxygenation status of tumours using independent component analysis (ICA). During my PhD I got interested in data science, learning analytics, and science communication and that led me to learn more about statistical techniques such as ICA, and data visualization using interactive dashboards.

Interests

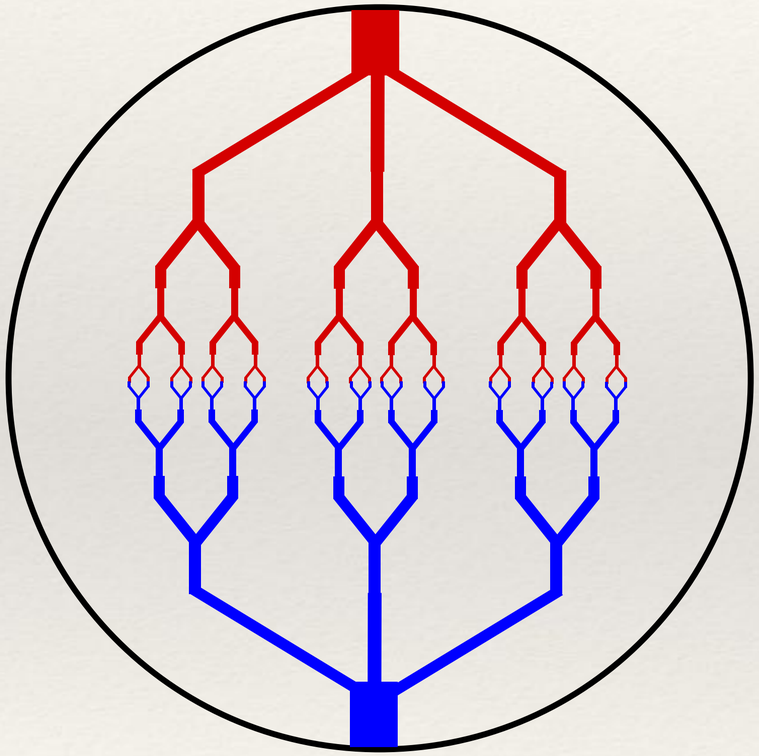
- Magnetic Resonance Imaging
- Tumour biology and physics
- Data visualization and science communication
- Learning analytics
- Scholarship of Teaching and Learning

Education

- PhD in Medical Physics, 2019
  University of British Columbia
- MSc in Medical Biophysics, 2012
  University of Toronto
- BSc in Biophysics, 2009
  University of British Columbia

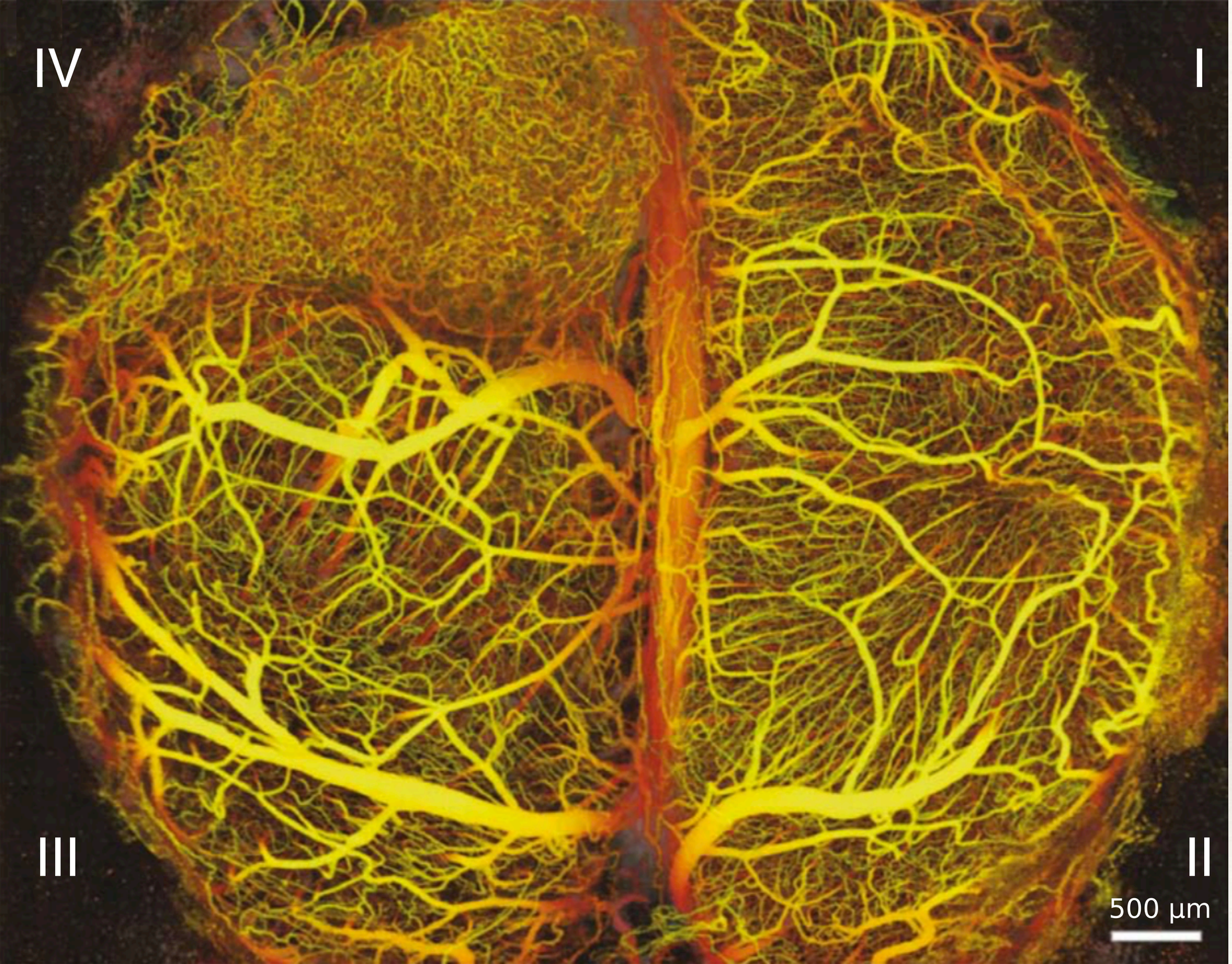
Implications of abnormal tumour vasculature

Normal blood vessels



Tumour vessels

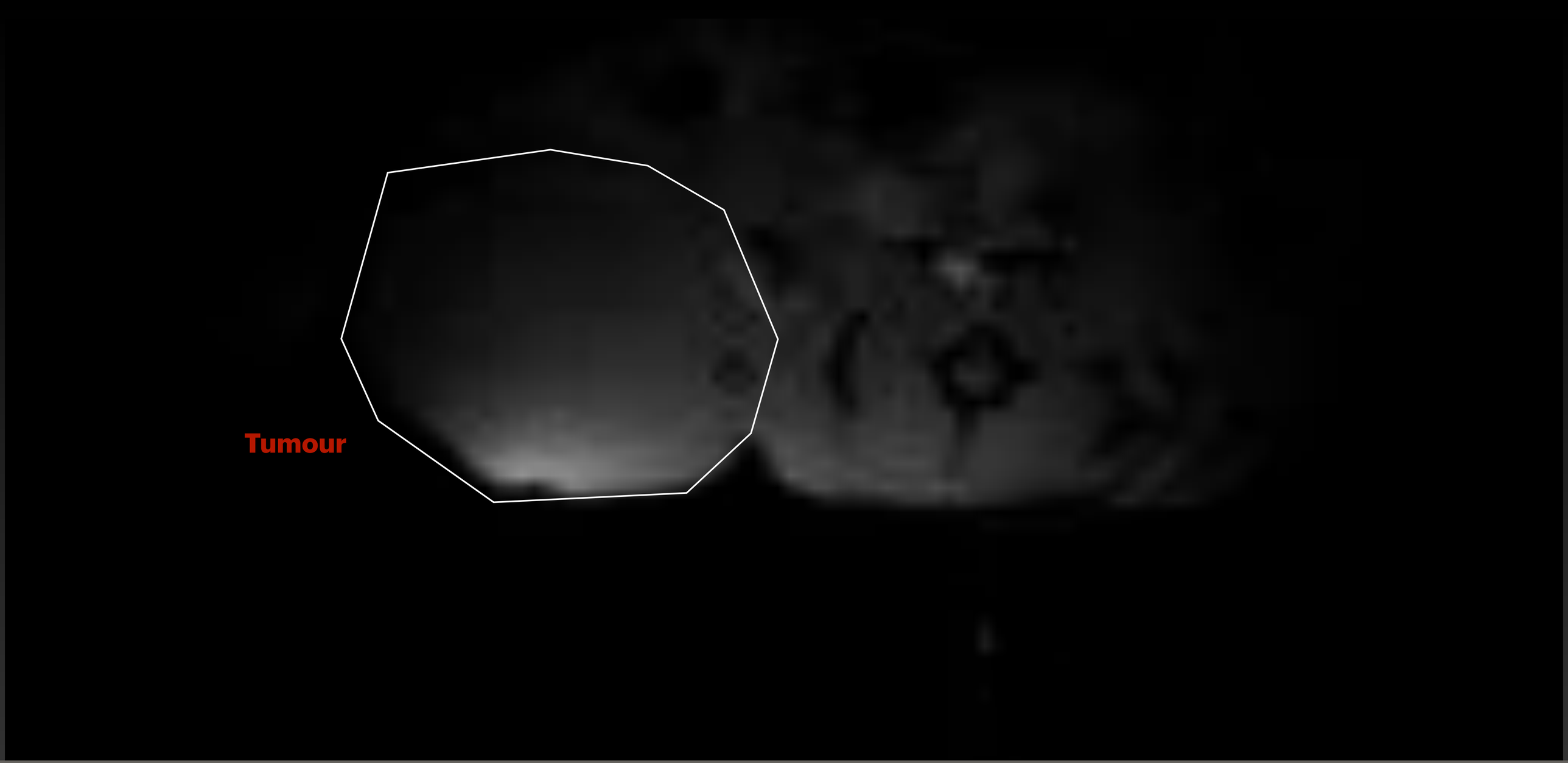
- Hypoxic and acidic environments significantly affect treatment and progression of cancer
- Abnormal perfusion patterns in the tumour limits delivery of drugs to target regions
- This necessitates higher doses that increases toxicity



Optical Frequency Domain Imaging (OFDI)

- Anaesthetized mouse brain imaged through **cranial windows** using optical imaging techniques
- Vessel colour encodes **depth**; closer vessels are yellow and further vessels are red
- Note the normal brain vascular branching patterns in quadrants I, II, and II compared to the chaotic network of the **U87 tumour** in quadrant IV

Vakoc et al (2009). *Nature Medicine Technical Reports*



Video with an injection of a **contrast agent** in a mouse. This helps us understand the blood flow and other kinetics of the tumour.

Research Interests

Learning Technologies

Use of learning technologies to enhance teaching and learning.

Active Learning

A learning method that de-emphasizes didactic teaching and actively engages students with material via problem solving, case studies, role plays and other methods.

Learning Analytics

Extracting trends from learner data using analytical tools to improve learning.

Equity in STEM

Developing and implementing methods of inclusive teaching to reduce systemic inequities in STEM education.

Visualizations

Representing data using effective graphs, plots, and other special visualizations.

Alternative Grading

Challenging the systems and structures associated with traditional grading in higher education.

Slido Question CQ 1.0

Logistics/Announcements

- No Labs or Tutorials in the first week! Labs will begin in Week 2, Tutorials will begin in Week 2.
- Lab Canvas session is separate from Lecture/Tutorial
- If you are Tutorial-exempt, register for XM2 - even if you are tutorial exempt, you can still attend Tutorials!
- There is no textbook to purchase for this course! You will need to get a lab manual.
- You will need a UBC Student Email to access Ed Discussion

Slido Question CQ 1.1

Course Structure

2021S2

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DATA 301

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Course Content; Weekly Structure

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Irving K. Barber Faculty of Science
Okanagan Campus

Department of Computer Science, Mathematics, Physics, and Statistics

Course Syllabus (Official)

Below is the official UBC-mandated Course Syllabus for DATA 301 or COSC 301. Elements of this document are **fixed** and unchanging. Additional details about the course are available on the course website.

DATA 301 or COSC 301 001

Introduction to Data Analytics (3)

2021 Summer Term 2

Online (Zoom) - Lectures will be recorded and available on Canvas. - Tuesday, Wednesday, and Friday from 12-2:30 PM

Course Instructor

Name: Dr. Firas Moosvi (he/his/him)

Office: ROOM 111

Phone: N/A

Content Page

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Unsyllabus

Teaching Team ✏️

Information about the teaching team and how to contact us.

Course Schedule 🗓️

A table of course topics and a week-by-week plan of what we intend to cover.

Doing Well 😊

Strategies and tips on how to do well in this course.

Getting Help 🆘

Learn how to get help and get support if you're struggling, academically or otherwise.

Evaluation ✅

Information about the grading system and evaluation scheme for this course.

Teaching Philosophy 🧙‍♀️

How this course will be taught and how humans learn (you may be surprised!).

Changes ✍️

List of changes made to the Unsyllabus since the start of term, and a rationale.

Honesty & Integrity 😇

Completing this course with honesty and integrity. Examples of things you can and should not not do.

Special Days 🤧💝🕌🥳

What to do if you have to miss things because of special days (including getting sick).

Physics 111

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Course Syllabus

This is the official syllabus and course outline for Physics 111.

PHYS 111 (3) Introductory Physics for the Physical Sciences I

The UBCO calendar description of this course is:

> Introduction to mechanics primarily for students majoring in the physical sciences (e.g. physics, chemistry, mathematics, computer science, geology, physical geography) or engineering. Particle kinematics and dynamics, work and energy, momentum, gravitation, rigid body motion, fluid statics and

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Evaluation

The grading scheme for this course is:

Item	Weight	Due date(s)
Learning Logs	10% (10 x 1%)	Saturdays at 6 PM
Homework	18% (9 x 2%)	Thursdays at 6 PM
Labs	32% (8 x 4%)	Variable
Tests	20% (5 x 4%)	Friday 4-5 PM
Final Exam (Online)	20%	Scheduled During the Exam Period

There will be 5 tests in this course in an (approximately) bi-weekly schedule. For each of the tests, there will be a bonus test one week later and the better score of the Test-Bonus Test pair will be taken.

> ⚠ **Caution**
>
> Please note that the "Labs" in this course are run almost completely separately from the Lectures/Tutorials/Tests/Exams. Any grading policies instituted in the lecture portion of the course are independent of the lab policies.

Other Grading Policies

There is a delicate balance between an instructor being flexible with deadlines, and giving students (particularly in introductory courses) too much freedom, to the detriment of your learning and your work habits. Over the years, I have tried to strike a good balance in this course with my policies but I'd like to experiment with one tweak this year.

For **only the Homework assignments** this year, here is the flexible grading policy I have instituted:

Submission Time	Maximum Possible Grade
Before the deadline	110% ^
2 days (48 hour grace period) after the deadline	100%
7 days after original deadline	80%
14 days after original deadline	60%
Any time before last day of classes	50%

Passing requirements

- All students must satisfy ALL conditions to pass the course:
    1. Obtain an average grade of at least 50% on the Labs, with no more than 3 missed labs,
    2. Obtain an average grade of at least 50% on the Test and Exam components together,
    3. Obtain an average grade of at least 40% on the Final Exam,
    4. Obtain a grade of at least 50% on the whole course.

If students do not satisfy the appropriate requirements, the student will be assigned the **lower** of their earned course grade or, a maximum overall grade of 45% in the course.

Lab Logistics

See you on Friday!