Mathematics/Physics 248 Section A01 COURSE OUTLINE

Department of Mathematics, Statistics, Physics and Astronomy, University of Victoria
Spring Term, 2018

INSTRUCTORS	Ryan Budney	Falk Herwig
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	DTB A516	Elliott 214

LECTURE 10:00am – 11:20am in COR A121, Mondays and Thursdays

LABORATORY ELL 160 11:30am–12:50pm Mondays, Thursdays
CLE A127 2:30pm–3:50pm Wednesdays, Fridays

OFFICE HOURS Budney Mon, Thur. 1pm–2pm   Herwig Tues. 12:30pm–1:30pm
TA. TBA - see later revision

PREREQUISITES Math 110 or Math 211, Math 200 and CSC 110 or CSC 111.

TEXT We have no required text for the course but the book **A Primer on Scientific Programming with Python** by Langtanen is a good general reference.

SYLLABUS Use of a high-level computer language for mathematical and scientific experimentation, simulation, and calculation. Programming of mathematics and numerical algorithms for physics problems using available functions and routines and also writing short programs for symbolic and numerical computations, visualization, graphical output, and data management.
The goal is to become competent with a high-level programming language and to practice solving math and physics problems in such a language. Emphasis on hands-on coding for experimentation in a variety of contexts.

TOPICS The primary topic is using the Python programming language and many of its extensions to perform elementary mathematical and numerical physics experiments. The course will be exploration-oriented. We will become acquainted with Linux and Python as required for our experiments. Topics to cover include: number systems on computers, numerical analysis, symbolic mathematics, simulations of solutions to differential equations, testing conjectures, graphics and plotting discovering statistical trends in data, manipulating various useful file formats, verification and validation, data acquisition, utility of pseudo-random processes (Monte-Carlo, etc).

FINAL GRADE The chart on the right describes how your final grade will be computed.

There is one mid-term exam and a final exam. There will be four graded homework assignments closely related to your work in the Labs. There will be five 'small tasks' associated to the course, each will be given one (of five) points, according to whether or not you complete the tasks. Details of the tasks will appear on CourseSpaces.

Mid-term	15 %
Small tasks	5 %
Homework	40 %
Final exam	40 %
Total	100 %

POLICIES Please consult the Department course policies.
http://www.uvic.ca/science/math-statistics/current-students/
undergraduate/course-policies/index.php

IMPORTANT DATES

Quiz 1	January 15th (Monday class)
Assignment 1	January 26th
Quiz 2	Jan. 29th (Monday class)
Assignment 2	February 23rd
Reading Break	Feb. 12th–16th
Mid-term	Feb. 26th (in class)
Assignment 3	March 16th
Quiz 3	March 19th–23rd (Monday class)
Assignment 4	April 6th
Final Exam	TBA

The mid-term exam will be during the regular class time.

Quizzes will be at the start of Monday classes, on weeks we have them.

Homework assignments will be due at the start of Monday classes, on weeks they are due. Ensure you turn in preliminary versions early and check for feedback on CourseSpaces. The version present on your repository at the due date and time is the version that will be graded.

MISSED ASSESSMENT

There will be no makeup homework or tests offered in this course. In cases where assessment is missed due to *documented illness*, *documented accident* or *documented family affliction*, we will modify the assessment scheme. Missed homework is accomodated by the best three of four policy (see **FINAL GRADE**). If you are excused from the midterm, the final exam will count for 55% of your final grade.