

Mathematics/Physics 248 Section A01 COURSE OUTLINE
Department of Mathematics, Statistics, Physics and Astronomy, University of Victoria
Spring Term, 2017

INSTRUCTORS	Ryan Budney rybu@uvic.ca SSM/DTB A516	Falk Herwig fherwig@uvic.ca Elliott 214
LECTURE	10:00am – 11:20am in DSB C108, Mondays and Thursdays	
LABORATORY	CLE A127 4:30pm–6:20pm Mondays (required) MAC D115 5:00pm–6:50pm Tuesdays (optional)	
OFFICE HOURS	Budney Mon, Thur. 1pm–2pm	Herwig Tues. 2pm–3pm
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 Langtane is a good general reference.	
SYLLABUS	Use of a high-level computer language for mathematical and scientific experimentation, simulation, and calculation. Programming of mathematics 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 mathematics language and to practice programming in such a language. Emphasis on hands-on coding for experimentation in a variety of mathematical and physical contexts.	
TOPICS	The primary topic is using the Python programming language to run elementary mathematical experiments. We will set up a standardized programming environment, running Python in Linux, and Linux in a VirtualBox, on your individual computers. 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 several ‘small tasks’ associated to the course, each will be equally weighted 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 16th
Assignment 1	January 25th
Quiz 2	January 30th
Assignment 2	February 8th
Reading Break	February 13th–17th
Mid-term	February 20th
Assignment 3	March 8th
Assignment 4	March 22nd
Quiz 3	March 27th
Final Exam	TBA

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

Quizzes will be in the required lab.

Homework assignments will be due at *noon* on the due dates, submitted electronically.

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 accommodated 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.