

Physics 342 – Computational Modeling and Analysis

Fall 2016

Course website <http://coursespaces.uvic.ca> Assignments and other material will be posted and completed assignments are to be uploaded to this website.

Instructor Dean Karlen office: Elliott 217 karlen@uvic.ca (250) 721-6585
office hours: Drop in or by appointment

Class schedule Lectures: Monday, Thursday 8:30-9:50 ECS 130
Labs: Tuesday 2:30-3:50 ECS 130

Textbooks Required: Coursepack for this course is available at the bookstore
Optional: Any reference textbook on Java

Course objectives This course introduces students to the use of computers in the study of the physical sciences. Behaviours of simple and complex physical systems are simulated by applying numerical methods to solve ordinary differential equations. Complex systems with a degree of unpredictability are treated using the concept of probability. Much of the course is devoted to statistical methods used to deal with uncertainties present in most experimental measurements. The Java computer language is used throughout. Students are expected to be familiar with the Java programming language.

Topics Numerical solutions to ordinary differential equations, probability theory, Monte Carlo methods, testing hypotheses, parameter estimation, errors and confidence intervals

Grading There will be several lab and class assignments, some short online quizzes, two mid-term “two-stage” exams, and a final exam. The final grade is determined as follows:

Online quizzes	5%	In-class questions	5%
Lab assignments	30%	Midterm exams (2)	20%
Lab midterms(2)	10%	Final exam	30%

The letter grades are obtained by converting the numerical scores as follows:

F	D	C	C+	B-	B	B+	A-	A	A+
0-49	50-59	60-64	65-69	70-72	73-76	77-79	80-84	85-89	90-100

Computer Students need a portable personal computer capable of running Java to bring to class and in order to do the lab assignments.

Calculator For the in-class and final exams, the departmental policy will be followed: On all examinations the only acceptable calculator is the Sharp EL-510R. This calculator can be bought in the Bookstore for about \$10.

Course experience Near the end of term you will be invited to complete an anonymous survey regarding your learning experience. The survey site is: <http://ces.uvic.ca>