

Computational Physics

Physics 102 - Spring 2017

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Office Hours:
T 10:00-11:00
W 11:00-12:00
Th 10:00-11:00
and by design or coincidence.

Text : *Provided PDF.*

Required Software : *Matlab* by Mathworks. A student license can be purchased from mathworks.com. You must have this installed on your computer by the second day of class.

Content: Today science, engineering and mathematics, are critically dependent on the computational power provided by digital computers. This course will be an introduction to the use of computational techniques to understand physical systems that are **un**approachable via analytical methods. The class will also be an introduction to effective programing in Matlab. Topics will include integration, solutions to transcendental equations, ordinary differential equations, partial differential equations, and data analysis.

Evaluation: Your grade will be computed from your performance on the quizzes, exams and final project.

Quizzes	30 %
Midterm Exam	15 % March 3
Final Exam	30 % April 12
Project	25 % Tuesday 10:30-12:30

Project: You will do an independent project in which you use computational physics to investigate something that you would like to understand more fully, and report your findings in a technical note.

Quizzes: The quizzes will mostly be adapting the code you wrote for the homework to solve a slightly different problem, or short questions about theory or Matlab syntax.

Sharing Code: Regarding the sharing of code: Don't do it. It is great to help each other figure out how to solve problems, but it is very hard to help someone understand by sharing code. So if you are not able to share code how can you help each other? The way to support each other in learning to code is to talk about it, talk about the ideas behind what you are doing. This helps everyone a lot, because there is a language used to talk about programming and computation, and learning to use that language is part of learning the ideas. If you find yourself saying something like "Type ex equals sign zee left parenthesis one colon five right parenthesis semicolon" then you are not doing the right thing. Say instead something like "you need to specify a subsection of the array".

Reasonable and appropriate accommodations, that take into account the context of the course and its essential elements, for individuals with qualifying disabilities, are extended through the office of Student Disability Services. Students with disabilities are encouraged to contact the Student Disability Services Coordinator at (925) 631-4164 to set up a confidential appointment to discuss accommodation guidelines and available services. Additional information regarding the services available may be found at the following address on the Saint Mary's website: <http://www.stmarys-ca.edu/academics/academic-advising-and-achievement/student-disability-services.html>