COURSE CALENDAR

COMPUTATIONAL PHYSICS

Fall semester 2023

https://www.phys.uconn.edu/~rozman/Courses/P2200_23F/

Last modified: December 5, 2023

Monday	Wednesday
Aug 28th **Lecture 1** Course logistics Linux Git and GitLab	Aug 30th **Lecture 2** Markdown Secure communications over insecure networks; asymmetric cryptography; ssh. Homework 1 assigned: due 9/6/2023
Sep 4th **Labor day – no classes**	Sep 6th **Lecture 3** Basics of Command Line Interface Introduction to Julia programming
Sep 11th **Lecture 4** Basics of Command Line Interface, II Working with Jupyter notebooks and Julia	Sep 13th **Lecture 5** Basics of Command Line Interface, III Working with Jupyter notebooks and Julia, II Homework 2 assigned: due 9/25/2023
Sep 18th **Lecture 6** Working with git and GitLab	Sep 20th **Lecture 7** Working with git repositories Numerical integration Homework 3 assigned: due 9/27/2023
Sep 25th **Lecture 8** Working with git repositories, II Richardson extrapolation Trapezoidal and Simpson's formulas Newton-Cotes quadrature	Sep 27th **Lecture 9** **Midterm I: take-home, due Oct 4, 2023** Computer representation of integer and floating point numbers
Oct 2nd **Lecture 10** Computer representation of floating point numbers, II	Oct 4th **Lecture 11** Using public/private keys with ssh Adaptive integration. QuadGK package.

MONDAY	WEDNESDAY
Oct 9th **Lecture 12** Gaussian quadrature Benchmarking in Julia	**Oct 11th** **Lecture 13** Gaussian quadrature, II Homework 4 assigned: due 10/18/2023
Oct 16th **Lecture 14** Ordinary differential equations. Euler's method.	**Oct 18th** **Lecture 15** Solving systems of ODEs. Julia package for IVP. Homework 5 assigned: due 10/25/2023
Oct 23rd **Lecture 16** Solving systems of ODEs, II Catastrophic cancellations	**Oct 25th** **Lecture 17** Solving nonlinear equations, I.
Oct 30th **Lecture 18** **Midterm II: take-home, due Nov 6, 2023** Solving nonlinear equations, II. Mean-field theory of ferromagnetism.	**Nov 1st** **Lecture 19** Fractals and fractal dimension Monte Carlo methods Diffusion-limited aggregation
Nov 6th **Lecture 20** Diffusion-limited aggregation, II	**Nov 8th** **Lecture 21** White dwarfs Homework 6 assigned: due 11/15/2023
Nov 13th **Lecture 22** White dwarfs, II	**Nov 15th** **Lecture 23** Handling events by `OrdinaryDiffEq` package Discussion of hw07 Homework 7 assigned: due 11/29/2023
Nov 20th **Thanksgiving recess – No classes**	**Nov 22nd** **Thanksgiving recess – No classes**
Nov 27th **Lecture 24** Monte Carlo methods	**Nov 29th** **Lecture 25** Introduction to parallel computing. Homework 8 assigned: due 12/6/2023
Dec 4th **Lecture 26** One, two, and three body problems **Midterm III: take-home** **due Dec 11, 2023, 1 pm – 3 pm, GS-119**	**Dec 6th** **Lecture 27** Restricted three body problem.
Dec 11th **Week of Finals**	**Dec 13th** **Week of Finals**