

# Syllabus

## INFORMATION

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### Instructor

**Maria J. Rodriguez**

Physics Department

Contact: [maria.rodriguez@usu.edu](mailto:maria.rodriguez@usu.edu)

### Teaching Assistant

Erin O'Donnell (undergraduate student teaching assistant)

Email: [erin.nicole.odonnell@aggiemail.usu.edu](mailto:erin.nicole.odonnell@aggiemail.usu.edu) (<mailto:rob.johnson@aggiemail.usu.edu>)

Jake Ciafre (graduate student teaching assistant)

Email: [j \(mailto:jonh.mojica@aggiemail.usu.edu\)](mailto:jakeciafre@outlook.com)[akeciafre@outlook.com](mailto:jakeciafre@outlook.com) (<mailto:akeciafre@outlook.com>)

### Office Hours:

Mon. or Wed. 4:00-5:00 p.m., or by appointment

## COURSE DESCRIPTION

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**Meeting Times:** Mon., Wed., 3:00-4:00 p.m.

*This course introduces programming languages and techniques used by physical scientists.*

Computer-based simulations and modeling tools are progressively used by industry and academia. In this course, students are introduced to some of the key computational techniques used in modeling and data analysis of real-world physics phenomena.

The course covers both conceptual areas of computer-assisted physics problem solving, and specific aspects of individual languages used by physical scientists. Emphasis is placed on program design, algorithm development and verification, and comparative advantages and disadvantages of different computer languages – including Python, Wolfram Mathematica, and Excel. For each language, the basic syntax and structure are covered with examples drawn from real applications. No prior programming experience is required.

## REFERENCES

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- *Course Slides and Notes* by Maria J. Rodriguez
- “Computational Methods for Physics” by Joel Franklin, Cambridge University Press

## COURSE OBJECTIVES

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The aim of this course is to give students an introduction to the uses of computer languages in the analysis of contemporary scientific problems

- employ higher-level programming and visualization tools,
- identify and describe the characteristics of various numerical methods,
- formulate and computationally solve a selection of problems in physics.

## FINAL PROJECT PRESENTATION

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Final Project Presentation: 12/07 (3 p.m. – 4:00 p.m.)

## GRADING

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The grade will be based on the toolkit's performance and the final project. Grades for the subject will be based on a total of 500 points: toolkits 300 points (40%) and final project 200 points (60%).

	Activity	Points
Toolkits		300
Final Project		200

## CANVAS INFORMATION

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Canvas is where course content, grades, and communication will reside for this course.

- <http://canvas.usu.edu> (<http://canvas.usu.edu/>)
  - Your **username** is your **A#**, and your **password** is your global password (the same one you use for Banner or Aggiemail).
- For Canvas (<http://canvas.usu.edu/>), Passwords (<https://id.usu.edu/Password/Help/#password>), or any other computer-related technical support contact the IT Service Desk (<http://it.usu.edu/>).
  - 435 797-4357 (797-HELP)
  - 877 878-8325
  - [http://it.usu.edu](http://it.usu.edu/) (<http://it.usu.edu/>)
  - [servicedesk@usu.edu](mailto:servicedesk@usu.edu) (<mailto:servicedesk@usu.edu>)

## UNIVERSITY POLICIES & PROCEDURES

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### Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and

creative activities, subject to the limitations imposed by professional responsibility. Faculty Code Policy #403 (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>) further defines academic freedom and professional responsibilities.

## Academic Integrity – "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish a higher level of conduct expected and required of all Utah State University students.

The Honor Pledge (<http://www.usu.edu/student-services/student-code/article5.cfm>): To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge:

*"I pledge, on my honor, to conduct myself with the foremost level of academic integrity."*

A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the Utah State University community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University.

## Academic Dishonesty

The instructor of this course will take appropriate actions in response to Academic Dishonesty, as defined by the University's Student Code. Acts of academic dishonesty include but are not limited to:

- **Cheating:** using, attempting to use, or providing others with any unauthorized assistance in taking quizzes, tests, examinations, or in any other academic exercise or activity. Unauthorized assistance includes:
  - Working in a group when the instructor has designated that the quiz, test, examination, or any other academic exercise or activity be done "individually;"
  - Depending on the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
  - Substituting for another student, or permitting another student to substitute for oneself, in taking an examination or preparing academic work;
  - Acquiring tests or other academic material belonging to a faculty member, staff member, or another student without express permission;
  - Continuing to write after time has been called on a quiz, test, examination, or any other academic exercise or activity;
  - Submitting substantially the same work for credit in more than one class, except with prior approval of the instructor; or engaging in any form of research fraud.
- **Falsification:** altering or fabricating any information or citation in an academic exercise or activity.
- **Plagiarism:** representing, by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without full and clear acknowledgment. It also includes using materials prepared by another person or by an agency engaged in the sale of term papers or other academic materials.

## Sexual Harassment

Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at (435) 797-1266.

## Withdrawal Policy and "I" Grade Policy

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

## Students with Disabilities

Students with ADA-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435)797-2444. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print, digital, or audio) are available with advance notice.

Contacting the Disability Resource Center (DRC):

- On Campus: Room 101 of the University Inn
- Phone: 435-797-2444
- Website: <http://www.usu.edu/drc/> (<http://www.usu.edu/drc/>)

Disability related resources for current students:

- DRC Student Handbook (<http://www.usu.edu/drc/currentstudents/handbook/>)
- Deaf and Hard of Hearing Student Handbook (<http://www.usu.edu/drc/currentstudents/DHHHandbook/>)
- Disability Related Scholarships (<http://www.usu.edu/drc/currentstudents/scholarships/>)
- Campus Resources (<http://www.usu.edu/drc/currentstudents/campusresources/>)
- Documentation Guidelines (<http://www.usu.edu/drc/prospectivestudents/docguide/>)
- Online Resources for Students with Disabilities (<http://www.usu.edu/drc/currentstudents/onlineresources/>)

## Diversity Statement

Regardless of intent, careless or ill-informed remarks can be offensive and hurtful to others and detract from the learning climate. If you feel uncomfortable in a classroom due to offensive language or actions by an instructor or student(s) regarding ethnicity, gender, or sexual orientation, contact:

- Student Services: <http://www.usu.edu/student-services/> (<http://www.usu.edu/student-services/>), 435.797.1712, [studentservices@usu.edu](mailto:studentservices@usu.edu) (<mailto:studentservices@usu.edu>), TSC 220
- Student Advocates: <http://www.usu.edu/ususa/legal/> (<http://www.usu.edu/ususa/legal/>), 435.797.2912, TSC 340,
- Access and Diversity: <http://www.usu.edu/accesscenter/> (<http://www.usu.edu/accesscenter/>), 435.797.1728, <mailto:access@usu.edu> (<mailto:access@usu.edu>); TSC 315
- Multicultural Programs: <http://www.usu.edu/accesscenter/multiculture/> (<http://www.usu.edu/accesscenter/multiculture/>), 435-797-1728, TSC 315
- LGBTQA Programs: <http://www.usu.edu/accesscenter/lgbtqa/> (<http://www.usu.edu/accesscenter/lgbtqa/>), 435-797-GAYS, TSC 314
- Provost's Office Diversity Resources: <http://www.usu.edu/provost/faculty/diversity/> (<http://www.usu.edu/provost/faculty/diversity/>), (435) 797-8176

You can learn about your student rights by visiting:

The Code of Policies and Procedures for Students at Utah State University:

<http://www.usu.edu/student-services/studentcode/> (<http://www.usu.edu/student-services/studentcode/>)

## **Grievance Process**

Students who feel they have been unfairly treated may file a grievance through the channels and procedures described in the Student Code: Article VII. Grievances (<http://www.usu.edu/student-services/studentcode/article7.cfm>).

## **Full details for USU Academic Policies and Procedures can be found at:**

- Student Conduct (<http://www.usu.edu/studentconduct>)
- Student Code (<http://www.usu.edu/student-services/studentcode/>)
- Academic Integrity (<https://usu.instructure.com/courses/172956>)
- USU Selected Academic Policies and Procedures ([http://www.usu.edu/provost/faculty/teaching/doc/Syllabus\\_resources\\_USU\\_policies.pdf](http://www.usu.edu/provost/faculty/teaching/doc/Syllabus_resources_USU_policies.pdf))
- USU Academic Policies and Procedures (<http://catalog.usu.edu/content.php?catoid=4&navoid=546>)
- Academic Freedom and Professional Responsibility Policy (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>)

## **Emergency Procedures**

In the case of a drill or real emergency, classes will be notified to evacuate the building by the sound of the fire/emergency alarm system or by a building representative. In the event of a disaster that may interfere with either notification, evacuate as the situation dictates (i.e., in an earthquake when shaking ceases or immediately when a fire is discovered). Turn off computers and take any personal items with you. Elevators should not be used; instead, use the closest stairs.

(<http://www.usu.edu/student-services/studentcode>)