

# ASTR501: COMPUTATIONAL TOOLS FOR ASTRONOMICAL RESEARCH

Fall 2021; 1 credit

Monday 10:00 am

Instructor: Dimitrios Psaltis; SO N324, 621-7859

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**Course Description.**— This course will introduce basic tools for astronomical research. We will cover the basics of the C programming language, the Python framework, Mathematica for symbolic manipulations, GitHub for collaboration and archiving, Doxygen for code documentation, etc.

**Course Objectives**— During this course students will learn to use some of the most common computational tools in astronomical research. The emphasis will be on the fundamental understanding of the benefits and limitations of the various tools as well as on application to basic tasks in astrophysics research.

**Learning Outcomes**— Upon completing this course, student should be able to

1. Write basic computer programs to perform various astrophysical tasks;
2. Cross-integrate different tools for, e.g., symbolic and numerical manipulations, numerical evaluation and graphical representation, etc.

**Prerequisites.**— The only prerequisite for this class is a competent use of a(ny) computer language.

**Course Website.**— Course material including handouts and notes will be posted on the D2L course website. You can find the syllabus, the schedule for the term (including any changes or updates to the schedule), handouts, etc., there.

**Meeting Times.**— This class is scheduled to be taught in person. The class will meet Mondays at 10am. As this is a lab class, our meetings will give us the opportunity to learn from and assist each other with coding and implementation challenges.

**Textbooks.**— Various links to online material, lecture slides, and notes will be available on the class web page.

## • Assignments – Staying Current

All assignments in class will start during class period and you will be expected to complete them before the next period.

## • Policies

**Attendance.**— Class attendance is optional. Please join the class only if you find it useful. However, if you do come to class, please give your full attention and participate in the discussion. If you choose not come to class, you are expected to submit to me (via email), in advance of the next class period, the assignment from the previous class. Non-attendance for any reason does not guarantee an automatic extension of due date or rescheduling of examinations/assessments.

All holidays or special events observed by organized religions will be honored for those students who show affiliation with that particular religion,

As we enter the Fall semester, your and my health and safety remain the university's highest priority. To protect the health of everyone in this class, students are required to follow the university guidelines on COVID-19 mitigation. Please visit [www.covid19.arizona.edu](http://www.covid19.arizona.edu).

If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel. If you must miss the equivalent of more than one week of class, you should contact the Dean of Students Office (<mailto:DOS-deanofstudents@email.arizona.edu>) to share documentation about the challenges you are facing.

Voluntary, free, and convenient COVID-19 testing is available for students on Main Campus. If you test positive for COVID-19 and you are participating in on-campus activities, you must report your results to Campus Health. To learn more about the process for reporting a positive test, visit the Case Notification Protocol @ <https://covid19.arizona.edu/test-trace-treat/positive-case-protocol> . COVID-19 vaccine is available for all students at Campus Health.

Visit the UArizona COVID-19 page for regular updates.

**Life challenges.**— If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office can be reached at 520-621-2057 or <mailto:DOS-deanofstudents@email.arizona.edu>.

**Physical and mental-health challenges.**— If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

**Academic Integrity.**— Cheating or any other form of unethical or threatening behavior will not be tolerated. You can find more information on these issues in the following two web sites of the university:

<http://deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity>

<http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>

**Accessibility and Accommodations.**— At the University of Arizona we strive to make learning experiences as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, you are welcome to let me know so that we can discuss options. You are also encouraged to contact Disability Resources (520) 621-3268 to explore reasonable accommodation. Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

**Incompletes.**— Incompletes will only be given if a student has satisfactorily completed the majority of the work in the class and has a valid reason, such as medical, for not completing the remainder of the course. Students must make arrangements with the instructor in order to receive an incomplete.

Other than grade and absence policies, the information contained in this syllabus may be subject to change with reasonable advance notice.