

# **Observational Planetary Astronomy & Remote Sensing (PTY5 521)**

*Spring 2020*

**Instructor:** Prof. Caitlin Griffith      Office: Space Sciences 424, 626-3806  
Email: [Griffith@lpl.arizona.edu](mailto:Griffith@lpl.arizona.edu)  
Class Hours: 12:30 PM to 1:45 PM Mon, Wed  
Class Room: Kuiper Space Sciences ZOOM  
Class Website: TBD

**Course Description:** The course will survey current techniques and instrumentation used in observational astronomy. The goal is to provide students with background that will allow them to consider the observational (empirical) basis of planetary astronomy, and begin to design observations to test their understanding of planetary atmospheres, surfaces, and orbital and bulk characteristics. The first half of the class will consist of lectures in order to give students a physical understanding of modern telescopes, optical configurations (e.g. adaptive optics), detectors, statistics, spectrometers and spacecraft instrumentation. The class will cover UV to infrared, and sub-millimeter and radar techniques. All lecture notes will be posted on the web. The second half of the course will proceed more like a workshop. The class will focus on the completion of the main assignment in the course, an observing proposal to a major observatory. Each student will give a short presentation their observing proposal and lead a short discussion session in class. This half of the class will delve more deeply into the most recent innovative techniques used in planetary astronomy. There will be guest lectures on some of the recent observational techniques. Due to the coronavirus we will not visit any local telescopes, as they are closed. All the same we will have a number of interesting ZOOM speakers this semester and we will see and observation on Mauna Kea at NASA's IRTF telescope in Hawaii.

**The course objectives include** physical understanding of modern telescopes, optical configurations (e.g. adaptive optics), detectors, statistics, spectrometers and spacecraft instrumentation.

**Learning outcomes include** that student learn the details of UV to infrared telescopes well enough be able to propose for time to conduct research on the major observatories. An addition objective is that the student learns the basics of millimeter observations.

**Text Book:** There will be no required textbook for the course, rather a number of recommended books or articles that students may read depending on their background and interests. The required reading for the course will be restricted to class notes and a

number of journal articles that use modern observational techniques to yield sometimes controversial results.

**Grades** will be based on three components weighted as follows:

10% Homework 1

10% Homework 2

30% Homework Report on a recent topic

50% Observing Proposal to a major telescope

The grades will be weighted to reflect the student's progress in grasping and using observational techniques, rather than their absolute comprehensive knowledge of the subject. This weighting will reflect the different backgrounds that students have upon entering the class.

The grading scale is A=90-100, B=89-80, C=79-70, D=69-0

Any recordings of class sessions will only be posted to my D2L course site, and not to any publicly accessible sites.

Such recordings are part of the students' educational record and will not be shared with anyone outside of the class.

Any recordings that are part of the students' educational record will NOT be shared with anyone outside of the class.

### Project

The main class assignment is an observing proposal, on the topic of the student's choice, to a major international telescope facility. The full proposal will be submitted to the professor first as a class assignment. Students will be encouraged to revise the proposal, following feedback by the professor and other students for a final grade. Worthy proposals will be submitted to the relevant telescope!

### Presentations

Students will present their proposals to the class for feedback prior to the initial submission of the proposal to the professor. In addition, there will be short student presentations regarding observational techniques and interpretations (i.e. scientific results) of the student's choice.

### Homework

There will be several homework assignments to reinforce the material. Students are encouraged to talk to each other and to the professor, if they have questions. However, the homework solutions should be written independently and the detailed math and logic of the solutions should be realized independently.

**Students are expected to comply with the University Policies**  
at: <https://academicaffairs.arizona.edu/syllabus-> policies.

*Live Online:*

- This class is scheduled to be taught in the LIVE ONLINE modality.
- **Meeting Times:** The class will meet (2 days a week at 12:30 times) via Zoom. Our synchronous meetings will give us the opportunity to listen and discuss the professors's meetings lectures.
- **Staying current:** You are required to complete (homework 1 by September 16, and homework 2 September 30) and the report by September 28, and your work on the telescope proposal by the last day of class in order to accomplish the stated goals of the class.
- **Class attendance:**
  - 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.
  - Notify your instructors if you will be missing an in person or online course.
  - [Campus Health](#) is testing for COVID-19. Please call (520) 621-9202 before you visit in person.
  - Visit the [UArizona COVID-19](#) page for regular updates.
- **Academic advising:** If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the [Advising Resource Center](#) can guide you toward university resources to help you succeed.
- **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 [DOS-deanofstudents@email.arizona.edu](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.

- **Exams:** [There will be no exams].