

## PTYS 595 Career Development

Fall 2023

3 Units

### Course Number and Title

PTYS 595 - August 2023 – Career Development (3 units)

### Instructor Information

Prof. Amy Mainzer (she/they)

Classroom: Kuiper 7

Lecture Time: Mondays 3:30-4:45pm AZ time, Tuesdays 2-3:15 pm AZ time

Office Hours: by appointment

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### Course Description

Obtaining a Ph.D. in planetary science is a starting point to one's career that can open many pathways. Many potential career options exist for degree holders in this field, including careers in private industry, national labs, education, public outreach, and academia. This course will help students prepare for successful careers in any of these areas by:

- Developing skills for helping to define and identify potential career paths
- Learning how to create a resume and CV that is appropriate for that path
- Learning how to propose to obtain funding to support one's work
- Developing skills for presenting scientific results to colleagues, the media, and the general public
- Handling obstacles and challenges unique to careers in planetary and Earth science
- Developing the skills to create a positive working environment.

### Course Prerequisites or Co-requisites

None

### Course Format and Teaching Methods

Course Modality – Live in person. Workload Expectations: Students are expected to attend lectures, participate in discussions, and complete homework assignments.

### Course Objectives

This course will help students prepare for successful careers in science and related fields through lectures, group discussions, and assignments related to writing papers, research proposals at multiple scales, resume and CV writing, alternative job opportunities, scientific publications, communication, and teaching/mentoring. The course is intended to help PTYS graduate students educate themselves about career options and develop skills needed for success when seeking careers in planetary science and related fields. The course will emphasize writing assignments and in-class presentations and workshops to refine presentation skills. The course is specifically designed for students wishing to improve their public speaking and presentation skills.

### Expected Learning Outcomes

After completing this course, all students will have learned

- What career options are available to them
- How to write a CV or resume specific to the jobs they will apply for
- For graduate students taking the 500-series course: How to write a proposal with clearly defined objectives, plan, and budget
- How to communicate science to the public and to professional audiences
- How to create a positive work environment and access resources to help achieve work-life balance

Graduate students (500-series course) will have learned how to write and review a professional proposal for a federal research program.

Undergraduate students (400-series course) will have learned how to write a research statement for a technical graduate M.S. or Ph.D. program.

### Revision of the Syllabus

- The course workload and course requirements (i.e., content, reading materials, and the structure of graded assignments) are subject to change, with reasonable advanced notice, as deemed appropriate by the instructor.

## 400/500 Co-convened Course Information

For the 500-level course, graduate students will write or referee a proposal to a graduate fellowship program or other research program as their final project to be presented in class. For the 400-level course, undergraduates will write a research statement for admission to a graduate program as their final project.

## Required Texts and Materials

None

## Schedule of Topics and Activities

Week	Dates	Topic	Assignment
1	8/21-8/22	<p><b>8/21 Careers I: Introduction &amp; overview of course.</b> Review course objectives, review syllabus and class policies. Overview of career options for students with doctorates in planetary science, including academia, education, national labs, private industry. Ice breaker activities first day.</p> <p><b>8/22 History I: History of the Field.</b> History of Planetary Science as a Career: from the creation of the U.S. National Academies, to the formation of land-grant universities, to the creation of NASA.</p>	Write your personal career objectives: where do you want to be in 5 years and in 10 years? What do you hope to learn as a result of this course?
2	8/28-8/29	<p><b>8/28 History II: History of the Field.</b> Continued.</p> <p><b>8/29 History II:</b> Guest speaker visits to discuss history of NASA &amp; the space race.</p>	Write down your backup plan.
3	9/5 (no class 9/4 – Labor Day)	<b>9/5 Careers II: Where Does the Money Come From?</b> History of NASA & its budgetary considerations.	Semester-long assignment: Begin tracking AAS job listings for non-postdoc jobs.
4	9/11-9/12	<p><b>9/11 Careers II/Communications I. Where do you find jobs?</b> We will examine the various professional societies' job advertising boards.</p> <p>Begin examination of how to write an effective science paper.</p> <p><b>9/12 Careers.</b> Role of professional societies.</p>	Find employment statistics and graduation rates from professional societies and write a short paragraph with a figure or two to discuss your conclusions.
5	9/18-9/19	<p><b>9/18 Communications I. How to write an effective science paper.</b> One of the fundamental methods of communication for scientists is writing articles in peer-reviewed journals. Overview of the structure, methods, and best practices for writing scientific papers.</p> <p><b>9/19 Communications I.</b> In-class activity: Ask ChatGPT write something and see whether it holds up as a publication-quality work.</p>	Find a paper that is clear, succinct, and serves as a good "role model" template for writing your own papers and write about why you chose it.
6	9/25-9/26	<p><b>9/25 Communications II.</b> In-class activity: present papers you selected and describe why you like them.</p> <p><b>9/26 Careers II: National lab.</b></p>	
7	10/2-10/3	<p><b>10/2 Proposals I. Formulating a proposal idea by defining a testable hypothesis.</b> Researching the current state of the field, defining a unique method for testing the hypothesis, and defining the resources required for conducting the experiment. Building a proposal team and defining project requirements.</p> <p><b>10/3 Guest speaker: Industry</b></p>	Read a proposal solicitation and begin writing a research proposal (e.g. NESSF or NSF Graduate Fellowship, ROSES, etc.). For undergraduates: read requirements for admission to a Ph.D. program.
8	10/9-10/10	<p><b>10/9 Proposals III: Budgets and resource estimation.</b> How to estimate the resources required to perform an experiment, construct a realistic schedule and milestones for completion of work, and construct a financial plan for the proposal.</p> <p><b>10/10 Guest speaker: NASA</b></p>	<p>Proposal writers: Work on proposals</p> <p>Proposal reviewers: develop evaluation criteria &amp; scoresheets</p>
9	10/16-10/17	<p><b>10/16 Careers III: Writing a Resume and CV.</b> Examine formats &amp; contents of CVs vs. resumes; tailor it for different jobs and job categories.</p> <p><b>10/17 Guest speaker: NASA</b></p>	Write your CV, and a short-form resume.
10	10/23-10/24	<p><b>10/23 Communication II: Press releases.</b> How to write a press release on a scientific result.</p> <p><b>10/24 Guest speaker: UA media office</b></p>	Write a draft press release based on a paper.
11	10/30-10/31	<b>10/30 Communication III: Giving a scientific talk.</b> How to give scientific talks of various lengths.	Answer written interview questions.

		<b>10/31 Communication III: Presenting scientific results to media and the general public.</b> How presenting results to the public differs from presenting results to a scientific audience. In-class activity: write written mock interview questions based on press releases.	
12	11/6-11/7	<b>11/6 Communications IV: Presenting scientific results on live radio, live TV.</b> Hostile interviews and how to handle them. In-class activity: Students present press releases in mock live interviews.  <b>11/7 Guest speaker: Museum curator</b>	Continue working on proposals and review criteria.
13	11/13-11/14	<b>11/13 Communications IV:</b> Class continues to present press releases in mock live interviews.  <b>11/14 Establishing a positive environment in science.</b> Impostor syndrome, workplace harassment and bullying, conflict resolution, work-life balance. Case study: how do experts handle climate change deniers? How to be a good collaborator and establish networks of good collaborators. Guest speaker from CAPS.	Continue working on proposals and review criteria.
14	11/20-21	<b>11/20 Careers IV: Finding a job.</b> Evaluate the results of semester-long examination of AAS job board  <b>11/21 Guest speaker: national lab</b>	Repeat your first assignment: Write down your personal career objectives.
15	11/27-11/28	<b>11/27-11/28 Final Projects.</b> Present initial of final proposal projects: proposers present proposals to reviewers and receive critiques.	Revise proposals according to comments received.
16	12/4-12/5	<b>12/4-12/5 Final Projects.</b> Present results of final proposal projects: proposers present revised proposals to reviewers.	

## Assessments

Grading for this course will be ABC based on:

Assessment Categories	Percentage of final grade
Attendance and participation in class activities	30%
Homework assignments	50%
In-class presentations:	20%
Total	100%

## Final Examination or Project

For the 500-level course, graduate students will write or referee a proposal to a graduate fellowship program or other research program as their final project to be presented in class. For the 400-level course, undergraduates will write a research statement for admission to a graduate program as their final project.

## Grading Scale and Policies

There is no final exam. Grades are assigned as follows:

A ≥90%  
B ≥80<90%  
C <80%

## Safety on Campus and in the Classroom

For a list of emergency procedures for all types of incidents, please visit the website of the Critical Incident Response Team (CIRT):

<https://cirt.arizona.edu/case-emergency/overview>

Also watch the video available at

[https://arizona.sabacloud.com/Saba/Web\\_spf/NA7P1PRD161/common/learningeventdetail/crtfy000000000003560](https://arizona.sabacloud.com/Saba/Web_spf/NA7P1PRD161/common/learningeventdetail/crtfy000000000003560)

## Nondiscrimination and Anti-harassment Policy

The University of Arizona is committed to creating and maintaining an environment free of discrimination. In support of this commitment, the University prohibits discrimination, including harassment and retaliation, based on a protected classification, including race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, or genetic information. For more information, including how to report a concern, please see: <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

## University Policies

All university policies related to this course and syllabus are available at: <https://catalog.arizona.edu/syllabus-policies>. This link includes the University's policies with respect to absences and class participation, threatening behavior, accessibility and accommodations, the code of academic integrity, non-discrimination and anti-harassment policy, safety on campus and in the classroom, student resources including campus health, counseling and psych services, survivor advocacy program, and preferred names and pronouns.

## Accessibility and Accommodations

At the University of Arizona, we strive to make learning experiences as accessible as possible. If you anticipate or experience barriers based on disability or pregnancy, please contact the [Disability Resource Center](#) (520-621-3268) to establish reasonable accommodations.

See <https://drc.arizona.edu/instructors/syllabus-statement>.

## COVID-19 Policies

Students are expected to comply with the University's COVID-19 policies. The details are at <https://covid19.arizona.edu/>. Face coverings are strongly encouraged, and all classrooms and labs are equipped with a supply of face coverings. The University will provide surgical masks in building front entrances, classrooms, and other large sites. Surgical and KN95 masks will also be provided upon request. If you have questions related to COVID-19, please contact Campus Health at 520-621-9202 or email [covidhelp@arizona.edu](mailto:covidhelp@arizona.edu).

## Subject to Change Notice

Information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the course instructor.

## Student Resources

The University of Arizona has a Basic Needs Resources page: <http://basicneeds.arizona.edu/index.html>