

## Department of Astronomy and Planetary Science AST 496C — Capstone Experience in Astronomy Fall 2022

### Course Information

- Meeting Times & Location: MWF 12:40 — 1:30 pm, Phy. Sci., Rm 218
- Credit: 3 credit hours
- Instructor & Email: Dr. Lisa Chien
- Email: [Lisa.Chien@nau.edu](mailto:Lisa.Chien@nau.edu)
- Office Location: Bldg. 19, Rm. 311
- Office Hours: MW 11:00 am — 12:00 pm

### Course Prerequisites

AST 280, (AST 333W or PHY 333W), and Senior Status

### Course Description, Objectives, & Structure

This course is the culmination of the undergraduate program in the Department of Astronomy and Planetary Science. It aims to catalyze the transformation of senior students from classroom learners to active independent professionals. It will also introduce students to the full range of academic and professional career options in the fields of astronomy and planetary science. Students will learn valuable skills that are required for successful careers in either academia or industry. These **transferrable workforce readiness skills** that this course will focus on are *professional development, self-management (or mental development), critical thinking, teamwork, time management, and communications and networking*. Students will participate in various discussions, trainings, and activities that are strategically designed to enhance these skills, and work directly with NAU Career Development professionals. The topics of discussions, trainings, and activities include **academic career options, professional resume, grad school and/or job applications, stress management, science communication skills, conference and networking skills, presentations, grant or science proposals, and interview skills**. Oral and written presentations, as well as mock interviews will be required in this class. AST 496C currently fulfills the Liberal Studies Essential Skills of **Critical Thinking, Effective Writing, Oral Communication, and Scientific Inquiry**.

**Student Learning Outcomes** that demonstrate the achievements of these Essential Skills include the ability to:

**SLO 1.** Describe the fundamental astrophysical, chemical, or geological background principles relevant to an answer of the research question;

**SLO 2.** Critically interpret and discuss peer-reviewed literature;

**SLO 3.** Clearly communicate and defend a proposal and scientific results in verbal, written, and visual formats at a level appropriate for scientific and non-scientific audiences;

**SLO 4.** Create effective poster and oral presentations for academic or professional conferences;

**SLO 5.** Demonstrate professionalism in all interactions as well as a positive and mature disposition.

### Required Materials & Technology

No required course materials. Weekly reading materials and assignments will be provided to students via BbLearn.

## Expectations, Assessments, & Grading System

Assessment	Point Distribution	Points
<b>NAU Career Development BBLearn modules</b>	8 assignments x 1 pt	<b>8</b>
Complete job/grad school search package	1 assignment x 5 pt	<b>5</b>
Written assignments	2 assignments x 1 pt + 4 assignments x 5 pt	<b>22</b>
Mock interview peer feedback form	1 assignment x 1 pt	<b>1</b>
<b>Total</b>	<b>16</b>	<b>36</b>

Classes missed	Effect on grade
≤ 2	None
3 — 5	Lowered by 5%
≥ 6	Lowered by 10%

Grade	Points
A	32 — 36
B	29 — 31
C	25 — 28
D	21 — 24
F	0 — 20

**Professionalism and Engagement:** As a culminating capstone experience, a large component of this class is to demonstrate effective communication and professionalism skills in addition to all of the other successes accomplished throughout your undergraduate career. Being engaged in class is not only important to your educational experience, but also to the experiences of your peers (i.e., future colleagues). As a result, demonstrating professionalism and engagement in class is required.

**Assignments:** All the assignments are designed to help students create and refine professional content, including cover letters, resumes, curricula vitae, professional statement, conference abstract, conference slides/poster, a mock grant/science proposal. A complete job or grad school search package is also required. Please discuss with the professor beforehand if you have to turn in late.

### Respect for Diversity and Inclusivity

It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you. I am NAU Safe Zone certified.

### University Policies

- [Academic Integrity Policy](#)

Simply two words— no tolerance. *All students* involved will receive zero points on that assignment or exam. If cheating/plagiarism continue, you will receive an F in the class and the Dean's office will be notified.

- [Student Institutional Excuses Policy](#)

Also see the new [Faculty Notification Request form](#) if you must miss classes.

## Tentative Schedule

Wk	Mon	Wed	Fri	Discussion Topics & Content	Reading/ Watching	Assignments
1	8/29	8/31	9/2	<b>Course introduction &amp; Career Development Overview:</b> Resources	* Competencies for a Career-Ready Workforce (NACE, 2021) * Walkowicz (2018)	<b>1)</b> 21st century workplace- Managing your career <b>2)</b> Knowing yourself and others- Establishing your professional identity
2	-	9/7	9/9	<b>Academic career options- Grad School:</b> Programs, schools, advisors, requirements (Fee, GRE, Transcript, statement)	* <a href="#">Guide to Graduate School (Astrobites)</a> * CD Graduate School Worksheet	<b>3)</b> Complete graduate school search Excel sheet for 3-5 schools <b>OR 3)* below</b>
3	9/12	9/14	9/16 (rm 232)	<b>Academic career options- Teaching &amp; Education:</b> Teaching positions, Astronomy Education Research  <b>Other career options:</b> Education, outreach, TO, industries, & companies, science policy	* <a href="#">Careers In Astronomy: What am I Doing with my Life??</a> * Webinars with Alaina G Levine for job seekers (AAS) playlist	<b>4)</b> Explore through experience- Designing career experiments <b>5)</b> Networking & relationship building- Building your personal brand <b>6)</b> Job search strategies- Identifying the right job(s) for you  <b>3)*</b> Complete 3 job searches
4	9/19	9/21	9/23	<b>Professional resume:</b> Cover letter & CV	* Industry Resume guide for PhDs * Action verbs for resumes (2 docs) * CD Resume Checklist + Transferable Skills * CD Writing Accomplishment Statements Worksheet * <a href="#">Impact CV</a>	<b>7)</b> Developing application materials- Crafting your resume content <b>8)</b> Cover letter (to BBLearn position) <b>9)</b> CV/Resume (CD Resume Dropbox OR Resume Review Appointment)
5	9/26	9/28	9/30: Career & Grad School Expo	<b>Professional statement:</b> Grad School application, other jobs, LaTeX ( <a href="#">Overleaf</a> , <a href="#">Typeset</a> )	* LaTeX Cheatsheet	<b>10)</b> Statement <b>(Assignment 3 due)</b>
6	10/3	10/5	10/7*	<b>EDIJ in STEM field</b>	* <a href="#">Bullying and harassment are rife in astronomy. poll suggests (Nature, 2021)</a> * <a href="#">10 Tips for Women Students in Science Fields</a>	<b>11)</b> Thriving in the workplace- Building & maintaining workplace relationships <b>(Assignment 9 due)</b>
7	10/10	10/12	10/14*	<b>Stress Management &amp; Emotional Intelligence</b>	* <a href="#">Confronting Failure: Approaches to building confidence and resilience in undergraduate researchers (eBook)</a>	<b>12)</b> Professional skills- Communicating in workplace
8	10/17	10/19	10/21*	<b>Science communications:</b> Writing articles & Oral presentation	* <a href="#">UGRADS Poster and Presentation Tips (2021)</a>	<b>(Assignment 10 draft due)</b>
9	10/24	10/26	10/28*	<b>Conference skills:</b> Title & abstract	* <a href="#">Doing Science: Writing conference abstracts (2014)</a> * Parts of an abstract	<b>13)</b> Conference title & abstract
10	10/31	11/2	11/4	<b>Conference:</b> Presentations (poster, slides)	* <a href="#">UGRADS Poster and Presentation Tips (2021)</a>	<b>14)</b> Slides OR a poster
11	11/7	11/9	-	<b>Presentations</b>		<b>(Assignment 14 due)</b>
12	11/14	11/16	11/18	<b>Grant proposals:</b> Effective practices	* <a href="#">How to find, read and organize papers</a> * How to write an Outreach proposal	<b>15)</b> Mock HURA Proposal
13	11/21	11/23	-	<b>Interviews</b>		• Interview skills- Sub lessons (optional) • The Hiring process- sub lessons (optional)
14	11/28	11/30	12/2	<b>Proposals review &amp; Mock interviews</b>		<b>(Assignment 15 due)</b>
15	12/5	12/7	12/9	<b>Proposals review &amp; Mock interviews</b>		<b>16) Mock Interview Peer Feedback Forms (Assignment 10 due)</b>

\* Grad student or alumni chat