

AST 210: Celebrating Diversity in Astronomy

General Information

- Department: Astronomy and Planetary Science
- Course: AST 210: Celebrating Diversity in Astronomy, Class Number 9433, Section 001
- Term: Spring 2024
- Total Units of Course Credit: 3
- Pre- and Co-Requisite(s): None
- Mode of Instruction: In-Person
- Meeting Time: Tuesday/Thursday 11:10am-12:25pm
- Location: Liberal Arts Rm 120

Instructor Information

- Instructor: Prof. Jasmine Garani
- Preferred Contact Method: Canvas Messaging
- Email: jasmine.garani@nau.edu
- Office Hours: TTH 9:00-10:30am
- Office Location: Physical Sciences, Room 225 B
- Zoom office hours may be requested if needed

Course Purpose

AST 210 is designed to help students develop an understanding of and greater familiarity with the cultural traditions and views of diverse people in astronomy (e.g. gender, race, ethnicity, sexual orientation diversities) and related sciences in general, and to help students develop appreciation of the scientific contributions and their greater impacts from these individuals.

Course Objectives and Learning Outcomes

This course is designed to be fully transparent, inclusive, and accessible to all students. The following student learning outcomes will be addressed throughout the course, and by the end of the semester, students will:

- Be able to explain historical and cultural background, barriers and biases, to access the field of science for people with a diverse identify or identities.
- Be able to explain specific scientific advances made by people with one or more diverse identities and the influence of those scientific advances on their respective scientific fields and society overall.
- Evaluate how influences of inequality, power and privilege affect participation in the science of astronomy, particularly to use intersectionality to address structural oppression/inequality how systems of oppressions mutual constitute, maintain and reinforce each other.

- Develop an increased personal capacity to build connections between and within communities.

NACE Competencies

The National Association of Colleges and Employers (NACE) is a leading source of information on employment for the college educated. They identified eight Career Readiness Competencies (CRC) that are “a foundation from which to demonstrate requisite core competencies that broadly prepare the college educated for success in the workplace and lifelong career management.” More information can be found at <https://www.naceweb.org/career-readiness/competencies/career-readiness-defined>. The following are the CRCs that apply to this course.

1. **Communication:** Clearly and effectively exchange information, ideas, facts, and perspectives with persons inside and outside of an organization.
2. **Critical Thinking:** Identify and respond to needs based upon an understanding of situational context and logical analysis of relevant information.
3. **Equity & Inclusion:** Demonstrate the awareness, attitude, knowledge, and skills required to equitably engage and include people from different local and global cultures. Engage in anti-racist practices that actively challenge the systems, structures, and policies of racism.
4. **Professionalism:** Knowing work environments differ greatly, understand and demonstrate effective work habits, and act in the interest of the larger community and workplace.
5. **Teamwork:** Build and maintain collaborative relationships to work effectively toward common goals, while appreciating diverse viewpoints and shared responsibilities.
6. **Technology:** Understand and leverage technologies ethically to enhance efficiencies, complete tasks, and accomplish goals.

Required Materials & Technology

1. Top Hat

In the navigation bar on the left side of the Canvas course, click the link labeled “Top Hat 1.3” and follow the instructions. You should have received an invitation to join the course, but if not, the join code is 422517. Top Hat is now FREE for all NAU students. You should not be asked to pay when you sign up. If you are, please contact me immediately.

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email (support@tophat.com), the in-app support button, or by calling 1-888-663-5491.

Assessment

Students WILL be assessed through a series of in-class assignments, reading quizzes, examinations, and projects.

Top Hat Questions: In each lecture class, there will be questions asked based on the lectures. They are designed to increase interaction in class, and you can discuss with your classmates

for most of the questions. They will be answered in class, and there will also be many extra participation points to earn. **No Top Hat questions are dropped and the total is 100 points.** These Top Hat Questions are ideally answered in class, but they will also be assigned due 2 days after the lecture day.

NACE CRC: **Professionalism, Technology**

In-class Exercises: Most Thursdays we will have an EDIJ exercise to raise your self-awareness and apply critical thinking to examine yourself. Scores for in-class exercises are based on completion, and not entirely on content. **No In-class Exercise points are dropped. There will be 8 exercises, with 5 points each, with a total of 40 points.** NACE CRCs: **Critical Thinking, Equity & Inclusion, Professionalism**

Reflection from Guest Speakers: Throughout the semester on most Thursdays, we will also have local guest speakers of Astronomy or Planetary Science, with diverse backgrounds. To improve EDIJ in the field, we not only need to look and learn from the past but also see the current process and efforts, and plan for future improvements. These guest speakers provide a view from our local community, and their personal efforts and observations of the field. This assignment is a one-page reflection from the guest speaker session, and the scores are also based on completion. **No reflection points are dropped. There will be 8 speakers, 5 points each, 40 points total.** NACE CRCs: **Equity & Inclusion, Communication**

Reading Quizzes: Reading quizzes are posted on Canvas, which will test students' comprehension of the material covered in the assigned reading. You have 2 attempts, and 60 minutes for each attempt. The highest grade before the due date will be counted. There will be 11 Reading Quizzes, each worth 6 points. **One lowest Reading Quiz score will be dropped, making a total of 60 points. Reading Quizzes are due on Tuesdays at 11:59pm.** NACE CRCs: **Critical Thinking, Professionalism, Equity & Inclusion, Technology**

Final Exam: There will be a final exam summarizing and consolidating the readings, lectures, and quizzes. You have 2 hours, but only 1 attempt. It will be open book and open notes. **It will be available on Canvas from Monday, May 6 at 6am to Thursday, May 9 at 12pm.**

Group Projects: There are two group projects, with a group of 5-6 students. The first project is constructing an infographic of an astronomer. The second project is an interview of a local or family STEM professional. Each group will first identify a shared identify in their group. This could be their gender identify, race or ethnic identity, sexual orientation, or some other axis of identity they choose to emphasize. ***The rule for the two projects is that one of the persons, the researched astronomer or the interviewee, must share the same identify as the group, and the other person must meaningfully differ from it.*** In this way, students will gain a deeper understanding of their personal identity, and learn about a different one. To support and scaffold the projects, we will have regular "milestone" assignments related to the projects. Milestone assignments will contribute to the overall cumulative grade of the term project. NACE CRCs: **Communication, Equity & Inclusion, Professionalism, Teamwork, and Technology.**

Group Project 1 – An Infographic of an Astronomer: Each group will pick an astronomer, current or past, to research that is not reviewed in class and is different from the interviewee.

Below are the details of the **Infographic Milestone Assignments:**

	Week	Format	Content
#1	1-2	Group, filled out form	A group contract filled out and signed by all members of the group.
#2	2	Group, 1 page	1) Discuss and briefly describe a shared, meaningful identify in your group. 2) Describe any differences within this identity 3) Describe how other axes of privilege/oppression affect this shared identify
#3	3	Group, 1 page	1) Describe why the group wishes to research this astronomer. 2) Describe how this astronomer shares, or is different from, the identify in your group.
#4	5	Group, 1 page	1) Describe the most important take-away point about the group’s astronomer. 2) Describe how the Infographic will deliver that message. 3) Submit at least 5 other sections/bullets on the infographic.
#5	6	Group, 1 page	Your group can determine the size of this Infographic. Submit your group Infographic as a PDF or JPEG file.

Group Project 2 – An Interview of a STEM Professional: Each group will choose their 3 top interviewees for their project. **Keep in mind the rule for group projects.** For example, if the astronomer chosen for the infographic shared identities with the group, the group must choose an interviewee with a meaningfully different identity. If the researched astronomer had a meaningful different identity, choose an astronomer with a similar identity. On Week 11, groups will be notified by the instructor who they should interview on their list so we will not have too many overlaps from our class. The interview should happen preferably in Week 12 or 13, and a presentation of the project by the entire group will happen in Week 14 or 15. The interview itself should be between 30-40 minutes, and should not last longer than 60 minutes. The format of the presentation is entirely up to the group, i.e. a video, slides, or a combination of both. The requirements are 1) 5-10 minutes of group presentation, and 2) preferably presented by everyone. Earlier interview are strongly recommended.

Below are the details of the **Interview Milestone Assignments:**

	Week	Format	Content
#1	10	Group, 1 page	1) Identify 3 local STEM persons with a shared meaningful identify or a different

			<p>identify. Don't contact them yet!</p> <p>2) Describe why the group wishes to interview this person.</p> <p>3) Describe how this person shares, or is different from, the identity.</p> <p>4) Submit at least 10 questions you intend to ask your interviewee.</p>
#2	11	Group, 1 page	<p>1) Once notified by the instructor, contact the professional to set up the interview whether in-person, with zoom, or a phone call. Request the interview to occur in Weeks 12 or 13, the latest Week 14 (if you are presenting on Week 15).</p> <p>2) Turn in an interview plan: who will ask which specific questions, a plan for note taking or recording the interview. The group must ask the proposed questions which will be approved by the instructor.</p>
#3	14-15	Group, Presentation	Presentation – make sure you consolidate any transcripts, notes, and/or recordings.
#4	16	Individual, 1 page	Create an outline for an essay synthesizing the course material and the interview with the local STEM professional, as well as a self review and peer review.

Grading System

The breakdown of how the final grade in the class will be calculated is given below, and any changes to the class scoring rubric will be discussed with the class prior to implementation and will only be made in the students' favor, never to their detriment.

Category	Point Distribution	Points	Notes
Top Hat Questions		100	None dropped
In-Class Exercises	5 points each	40	None dropped
Guest Speaker Reflections	5 points each	40	None dropped
Reading Quizzes	6 points each	60	1 lowest dropped
Infographic Project		100	
Interview Project		90	
Final		70	
Total		500	

The lowest reading quiz grade will be dropped.

Grading Distribution:

Midsemester Total Points (Infographic project, reading quizzes 1-5, reflections 1-5, Top Hat Questions through Harvard Computers)	Midsemester Grade	Semester Total Points	Final Grade
163 to 182	A	450 to 500	A
145 to 162	B	400 to 449	B
127 to 144	C	350 to 399	C
109 to 126	D	300 to 349	D
0 to 108	F	0 to 299	F

Grades will be kept up to date in Canvas. It is the student's responsibility to frequently check their scores in Canvas for accuracy. Any score in question must be discussed with me within two weeks of the due date. After two weeks, I will not entertain any challenges to the scores in Canvas.

Sometimes instructors make mistakes, and I am no exception: exams end up being harder than expected, or assignments are just too ambitious for the time available. In these (hopefully rare) cases, I reserve the right to modify the final course grades upwards. This modification is subject to the following policies: (1) the same modification will be applied to the grades of all students, and (2) the modification may never result in a lower grade, but always a higher one.

Makeup and Late Work

Students must obtain permission in advance of a regularly scheduled examination in order to take a make-up examination. An institutional excuse is required to get an extension for an online reading quiz assignment. In addition, if unforeseen sickness occurs, please reach out to me and I will do my best to accommodate you in a reasonable manner. Late Top Hat questions and project assignments will not be accepted. Points will be deducted from the reading quizzes, in-class exercises, and speaker reflections at a rate of 10% for every day that they are late.

Administrative Drop

As a professor, I am required to administratively drop students from the course who do not participate in the first week of classes. To determine if you have participated in the first week, I will be checking your Canvas attendance and activity. To not be dropped from the course please participate in Top Hat questions and access this course through Canvas during the first week of classes.

Tentative course schedule. Any changes made during the semester will be with the consultation of the class and only to the students' benefit and not to their detriment.

-	Date	Topic	Group Projects Due	Reading Quiz Due
1	Tu, 1/16	Course Introduction	-	-
	Th, 1/18	Overview of World History in Astronomy	Groups formed	-
2	Tu, 1/23	Overview of World in History of Astronomy (cont.)	Infographic Assignment #1 (Group, fillable form)	-
	Th, 1/25	Why so few? Women in STEM Report (2010)	Infographic Assignment #2 (Group, 1 page)	-
3	Tu, 1/30	Why so few? Women in STEM Report (2010)	-	#1
	Th, 2/1	Guest Speaker: Anna Baker	Infographic Assignment #3 (Group, 1 page)	-
4	Tu, 2/6	NAU and National EDIJ Efforts	-	#2
	Th, 2/8	Guest Speaker: Dr. Jennifer Hanely	-	-
5	Tu, 2/13	Caroline Herschel, Ada Lovelace	-	#3
	Th, 2/15	Guest Speaker: Schuyler Borges	Infographic Assignment #4 (Group, 1 page)	-
6	Tu, 2/20	Maria Mitchell and The Harvard Computers	-	#4
	Th, 2/22	Guest Speaker: Andy López-Oquendo	-	-
7	Tu, 2/27	The Harvard Computers (cont.)	-	#5
	Th, 2/29	Guest Speaker: Dr. Christina Thomas	Infographic Assignment #5 (Infographic)	-
8	Tu, 3/5	Inge Lehmann, Marie Tharp, and Vera Rubin	-	#6
	Th, 3/7	Guest Speaker: Anna Engle	-	-
9	Tu, 3/12	----- SPRING BREAK	-	-
	Th, 3/14	NO CLASS -----	-	-
10	Tu, 3/19	Black Hole Hunters (from PBS NOVA series), Jocelyn Bell Burnell and Women in Nobel Prizes	-	-

	Th, 3/21	Guest Speaker: Dr. Teddy Kareta	Interview Assignment #1 (Group, 1 page)	-
11	Tu, 3/26	Women in Nobel Prizes (cont.)		-
	Th, 3/28	Frank Kameny, James Pollack, Jane Rigby, and Sally Ride	Interview Assignment #2 (Group, 1 page)	
12	Tu, 4/2	Mae Jamison, Ed Dwight Jr., and Minority Astronauts	Conduct Interviews	#7
	Th, 4/4	Guest Speaker: Dr. Diego Munoz		-
13		The Hidden Figures and Nancy Roman		#8
	Tu, 4/9			-
	Th, 4/11	Nortan vs Macy and the Controversy of JWST		-
14	Tu, 4/16	Interview Presentations (Interview Assignment #3)		#9
	Th, 4/18			-
15	Tu, 4/23	Interview Presentations (Interview Assignment #3)		#10
	Th, 4/25			-
16	Tu, 4/30	TBD		#11
	Th, 5/2	TBD	Interview Assignment #4 (Individual, 1 page)	-
Final Exam: Monday, May 6, 6:00am to Thursday, May 9, 12:00pm on Canvas				

Academic Honesty

Please read this section carefully as each student is required to understand and comply with all Academic Integrity rules and standards. Both NAU and this Department/Course have standards which are written and referenced below.

Both myself and the science/engineering profession have absolutely no patience with cheating. Anyone cheating on an exam will receive a zero on that exam, and possibly a failing grade in the

course. If anyone is caught using another student's account in Top Hat, both the students may receive a zero for the entire "in class questions" portion of the grade.

Note that no student will be allowed to exit the classroom during any of the exams, unless there is an emergency. Therefore, make sure you get a drink and visit the facilities in advance. If you feel that you might need to leave the classroom during an exam, you must get advance permission from the professor, in writing (email), before the exam. The use of cell phones at and time during an exam will be considered an act of academic dishonesty. The same holds true for smart-watches and "Google Glasses", or other enhanced vision products. You must not use or look at or touch your phone or watch (even if not a smart watch) at any time. You will be asked to place all such products securely away, out of reach and view, before the exam begins. You

are not allowed to use your phone as a calculator. The same holds true for any calculator that can communicate with any other device or user. You may not bring in any paper to any exam, including “cheat sheets”, and you may not take any paper out of the classroom after any exam. You are not allowed to look at the exam of another student, nor are you allowed to send or receive any information and/or signals or other forms of communication during an exam. The violation of any of these Academic codes of conduct may result in your failing the course.

In general, it is not my responsibility to attempt to describe and prohibit any and all forms of Academic Dishonesty. It is your responsibility to uphold the highest ethical standards. If you have any doubt or question about this policy, it is your responsibility to ask the professor in advance and to be clear about the answers and policies. Again, the text above and the attached NAU policies try to be very clear about what constitutes an act of Academic Dishonesty, but we cannot anticipate every possible form of cheating in advance. So the attachments and examples above are not meant to be comprehensive.

Academic Dishonesty information will be given to the Dean of Students and a written copy of any such incident may be attached to your official NAU file

Any student that has been found to be cheating will receive a 0 for the assignment in question.

University Policies

ACADEMIC INTEGRITY

NAU expects every student to firmly adhere to a strong ethical code of academic integrity in all their scholarly pursuits. The primary attributes of academic integrity are honesty, trustworthiness, fairness, and responsibility. As a student, you are expected to submit original work while giving proper credit to other people’s ideas or contributions. Acting with academic integrity means completing your assignments independently while truthfully acknowledging all sources of information, or collaboration with others when appropriate. When you submit your work, you are implicitly declaring that the work is your own. Academic integrity is expected not only during formal coursework, but in all your relationships or interactions that are connected to the educational enterprise. All forms of academic deceit such as plagiarism, cheating, collusion, falsification or fabrication of results or records, permitting your work to be submitted by another, or inappropriately recycling your own work from one class to another, constitute academic misconduct that may result in serious disciplinary consequences. All students and faculty members are responsible for reporting suspected instances of academic misconduct. All students are encouraged to complete NAU’s online academic integrity workshop available in the E-Learning Center and should review the full *Academic Integrity* policy available at <https://policy.nau.edu/policy/policy.aspx?num=100601>.

COPYRIGHT INFRINGEMENT

All lectures and course materials, including but not limited to exams, quizzes, study outlines, and similar materials are protected by copyright. These materials may not be shared, uploaded, distributed, reproduced, or publicly displayed without the express written permission of NAU. Sharing materials on websites such as Course Hero, Chegg, or related websites is considered copyright infringement subject to United States Copyright Law and a violation of NAU Student Code of Conduct. For additional information on ABOR policies relating to course materials, please refer to [ABOR Policy 6-908 A\(2\)\(5\)](#).

COURSE TIME COMMITMENT

Pursuant to Arizona Board of Regents guidance (ABOR Policy 2-224, *Academic Credit*), each unit of credit requires a minimum of 45 hours of work by students, including but not limited to, class time, preparation, homework, and studying. For example, for a 3-credit course a student should expect to work at least 8.5 hours each week in a 16-week session and a minimum of 33 hours per week for a 3-credit course in a 4-week session.

DISRUPTIVE BEHAVIOR

Membership in NAU's academic community entails a special obligation to maintain class environments that are conducive to learning, whether instruction is taking place in the classroom, a laboratory or clinical setting, during course-related fieldwork, or online. Students have the obligation to engage in the educational process in a manner that does not interfere with normal class activities or violate the rights of others. Instructors have the authority and responsibility to address disruptive behavior that interferes with student learning, which can include the involuntary withdrawal of a student from a course with a grade of "W". For additional information, see NAU's *Disruptive Behavior in an Instructional Setting* policy at <https://nau.edu/university-policy-library/disruptive-behavior>.

NONDISCRIMINATION AND ANTI-HARASSMENT

NAU prohibits discrimination and harassment based on sex, gender, gender identity, race, color, age, national origin, religion, sexual orientation, disability, veteran status and genetic information. Certain consensual amorous or sexual relationships between faculty and students are also prohibited as set forth in the *Consensual Romantic and Sexual Relationships* policy. The Equity and Access Office (EAO) responds to complaints regarding discrimination and harassment that fall under NAU's *Nondiscrimination and Anti-Harassment* policy. EAO also assists with religious accommodations. For additional information about nondiscrimination or anti-harassment or to file a complaint, contact EAO located in Old Main (building 10), Room 113, PO Box 4083, Flagstaff, AZ 86011, or by phone at 928-523-3312 (TTY: 928-523-1006), fax at 928-523-9977, email at equityandaccess@nau.edu, or visit the EAO website at <https://nau.edu/equity-and-access>.

TITLE IX

Title IX of the Education Amendments of 1972, as amended, protects individuals from discrimination based on sex in any educational program or activity operated by recipients of federal financial assistance. In accordance with Title IX, Northern Arizona University prohibits discrimination based on sex or gender in all its programs or activities. Sex discrimination includes sexual harassment, sexual assault, relationship violence, and stalking. NAU does not discriminate on the basis of sex in the education programs or activities that it operates, including in admission and employment. NAU is committed to providing an environment free from discrimination based on sex or gender and provides a number of supportive measures that assist students, faculty, and staff.

One may direct inquiries concerning the application of Title IX to either or both the Title IX

Coordinator or the U.S. Department of Education, Assistant Secretary, Office of Civil Rights. You may contact the Title IX Coordinator in the Office for the Resolution of Sexual Misconduct by phone at 928-523-5434, by fax at 928-523-0640, or by email at titleix@nau.edu. In furtherance of its Title IX obligations, NAU promptly will investigate or equitably resolve all reports of sex or gender-based discrimination, harassment, or sexual misconduct and will eliminate any hostile environment as defined by law. The Office for the Resolution of Sexual Misconduct (ORSM): Title IX Institutional Compliance, Prevention & Response addresses matters that fall under the university's Sexual Misconduct policy. Additional important information and related resources, including how to request immediate help or confidential support following an act of sexual violence, is available at <https://in.nau.edu/title-ix>.

ACCESSIBILITY

Professional disability specialists are available at Disability Resources to facilitate a range of academic support services and accommodations for students with disabilities. If you have a documented disability, you can request assistance by contacting Disability Resources at 928-523-8773 (voice), 928-523-8747 (fax), or dr@nau.edu (e-mail). Once eligibility has been determined, students register with Disability Resources every semester to activate their approved accommodations. Although a student may request an accommodation at any time, it is best to initiate the application process at least four weeks before a student wishes to receive an accommodation. Students may begin the accommodation process by submitting a self-identification form online at <https://nau.edu/disability-resources/student-eligibility-process> or by contacting Disability Resources. The Director of Disability Resources, Jamie Axelrod, serves as NAU's Americans with Disabilities Act Coordinator and Section 504 Compliance Officer. He can be reached at jamie.axelrod@nau.edu.

RESPONSIBLE CONDUCT OF RESEARCH

Students who engage in research at NAU must receive appropriate Responsible Conduct of Research (RCR) training. This instruction is designed to help ensure proper awareness and application of well-established professional norms and ethical principles related to the performance of all scientific research activities. More information regarding RCR training is available at <https://nau.edu/research/compliance/research-integrity>.

MISCONDUCT IN RESEARCH

As noted, NAU expects every student to firmly adhere to a strong code of academic integrity in all their scholarly pursuits. This includes avoiding fabrication, falsification, or plagiarism when conducting research or reporting research results. Engaging in research misconduct may result in serious disciplinary consequences. Students must also report any suspected or actual instances of research misconduct of which they become aware. Allegations of research misconduct should be reported to your instructor or the University's Research Integrity Officer, Dr. David Faguy, who can be reached at david.faguy@nau.edu or 928-523-6117. More information about misconduct in research is available at <https://nau.edu/university-policy-library/misconduct-in-research>.

SENSITIVE COURSE MATERIALS

University education aims to expand student understanding and awareness. Thus, it necessarily involves engagement with a wide range of information, ideas, and creative representations. In their college studies, students can expect to encounter and to critically

appraise materials that may differ from and perhaps challenge familiar understandings, ideas, and beliefs. Students are encouraged to discuss these matters with faculty.