

# SYLLABUS for AST/GLG 190 – The Planets

## Fall 2023 - MWF 12:40 – 1:30 pm

College of the Environment, Forestry, and Natural Sciences  
Department of Astronomy and Planetary Science  
AST/GLG 190: Exploring the Planets, 3 credits

Fall, 2023

### Meeting time, days, and location:

- MWF 12:40 – 1:30pm
- Science and Health, Room 106

**Course Pre-Requisite(s):** none

**Mode of Instruction:** In Person

**Primary Textbook:** <https://openstax.org/details/books/astronomy>

**Instructor:** Prof. Joshua Emery

**Office:** Physical Science (Bldg 19), Room 323/324

**Office Phone:** 928-523-6495 (landline - no texting capability)

**Office hours (*times I'm available to help*):** M 3-4 pm and W 10-11am, or by appointment

**Email:** [joshua.emery@nau.edu](mailto:joshua.emery@nau.edu)

### Course Purpose:

Advancing an understanding of the occupants of our Solar Systems is a key educational goal of the Department of Astronomy and Planetary Science (APS). AST/GLG 190 provides a foundation for that understanding by introducing the study of planetary science. This



*Dr. Neil DeGrasse Tyson is an extraordinary popularizer of astronomical discoveries*



*Dr. Cecilia Payne Gaposchkin discovered the compositions of stars (including the Sun)*

foundation includes the exploration of planetary landscapes and how they formed, as well as the technology that humankind has used to explore these worlds and develop this understanding.

The course satisfies major requires for the NAU Astronomy major, is required for students pursuing an Astrogeology minor, and is an elective for other majors and minors across the University. Students will:

- Become familiar with what we know (and don't know) about the planets, satellites, and other objects in the Solar System, particularly with respect to their geology
- Learn how different geologic processes operate on different bodies in the Solar System
- Develop critical thinking skills, learn about the scientific method
- See if a major in astronomy is for you!

**Liberal Studies:** AST/GLG190 is approved as a Liberal Studies course under the Science and Applied Science Distribution Block. The Liberal Studies program is designed to provide a breadth of understanding to complement the in-depth studies of any particular major. Courses in the Science and Applied Science distribution block enhance students' understanding of the nature and the use of technology in exploring nature. **The three essential skills** that will be practiced in this course are: i) scientific inquiry, the skills of formulating hypotheses on the basis of observations, obtaining and analyzing data to test hypotheses, and explaining phenomena by means of accepted principles, theories, or laws; ii) critical thinking, the skills – particularly as applied to one's own work – of articulating the meaning of statement, judging the truth of a statement while keeping in mind possible biases, and determining whether a conclusion is warranted by the evidence provided; and iii) quantitative reasoning,

## SYLLABUS for AST/GLG 190 – The Planets Fall 2023 - MWF 12:40 – 1:30 pm

the application of numerical, visual or symbolic reasoning for the purposes of drawing inferences, understanding phenomena or making predictions.

### Course Student Learning Outcomes:

Student Learning Outcomes (SLOs) contribute to the Liberal Studies Science and Applied Science Distribution Block (indicated by “SAS”) and the essential skills of scientific inquiry (indicated by “SI”), critical thinking (indicated by “CT”), and quantitative reasoning (QR).

Students who successfully complete this Liberal Studies course will:

- SLO 1. Understand and be able to explain in words and diagrams the structure of the Solar System, at least two hypotheses for its formation, which hypothesis is better supported by observations, and explain how this formation is expressed in the structure of the Solar System and its planetary bodies (SAS, SI, CT).
- SLO 2. Understand and be able to explain in words and diagrams the physical process by which the Sun generates heat, including at least two hypotheses for this process and explaining which hypothesis is better supported by observations (SAS, SI).
- SLO 3. Understand and be able to explain the basic physical and geologic processes that operate on solid-surface planetary bodies and how they operate differently on different bodies (SAS). On the basis of observations in spacecraft data, formulate hypotheses for planetary landscapes and test those hypotheses with an additional dataset. Interpret the formation and evolution of specific planetary landscapes (SI).
- SLO 4. Understand and be able to explain the physical laws and technology used in planetary exploration (SAS, QR).
- SLO 5. Understand, be able to explain, and apply basic quantitative reasoning, accepted theories or laws, and analytical methods used in planetary exploration for testing hypotheses, including identifying the most appropriate approach (SAS, SI, CT, QR).
- SLO 6: Demonstrate knowledge of the dynamism of planetary science and on-going discoveries in this field, including how new or recent data are used to test hypotheses and whether the conclusion for the data is warranted (SAS, SI, CT).

This course also supports the achievement of Department of Astronomy and Planetary Science learning outcomes as listed at <https://nau.edu/astronomy-and-planetary-science/bs-astronomy/> which include:

- Students will be able to apply the laws of physics in order to understand the:
  - origin and evolution of the Solar System and other planetary systems
  - origin and evolution of stars
- Students will be able to apply mathematical tools such as elementary . . . algebra, geometry, trigonometry, . . . to solve physics and astronomy problems
- Students will develop problem-solving capacities. In particular, a student will be able to:
  - ascertain the known and unknown aspects of a problem
  - describe the fundamental physical principles in the problem
- Students will be able to clearly communicate and defend their work in verbal, written, and visual formats to . . . non-scientific audiences

Lastly, this course provides a number of career-ready competencies (CRCs) – skills that will broadly prepare you for success in the workplace and lifelong career management<sup>1</sup>. CRCs in this course include:

- **Career & Self-development:** Display curiosity; seek out opportunities to learn
- **Communication:** exchange information and perspectives in a clear manner that others can effectively understand.
- **Critical Thinking:** make judgments using sound and inclusive reasoning

## SYLLABUS for AST/GLG 190 – The Planets Fall 2023 - MWF 12:40 – 1:30 pm

- **Professionalism:** Act equitably with integrity and accountability; be present and prepared.
- **Teamwork:** Listen carefully to others, taking time to understand, ask appropriate questions without interrupting
- **Technology:** use technology appropriate to complete relevant tasks

[<sup>1</sup>NACE Career Readiness website <https://www.naceweb.org/career-readiness/competencies/career-readiness-defined/>]

### Assignments/Assessments of Course Student Learning Outcomes (grading weights):

Assignments / assessments are designed to support the accomplishment of Course Student Learning Outcomes, and will be in the form of i) in-class discussions, ii) online quizzes, iii) current events essays, and iv) four exams.

- Quizzes (15%):** [SLOs 1-4. CRCs: Career and Self-development. Technology]  
Lecture time will be focused on integrating the new information gained. Students are responsible for their own initial learning through reading the textbook assignments and powerpoint slides. Pedagogy shows that for best comprehension, readings should be completed *before* class. *Read actively!* Take notes, make an outline, and note anything you don't understand so you can ask about it.  
*To encourage reading, online quizzes will be administered via Canvas each week.  
No make-up reading quizzes will be offered.  
Lowest 2 reading quiz grades will be dropped.*
- In-class discussions (20%):** [SLOs 1-5, SI, CT, QR. CRCs: Career and Self-development. Teamwork. Communication. Professionalism Critical thinking]  
Throughout the semester, the class will split up into smaller sections for group discussions of material covered in class. Discussions are facilitated through worksheets that each group will fill out and turn in. These worksheets will be graded. Only students present for the discussion will receive credit for the group work.  
*No make-up in-class discussions will be offered.  
Lowest 2 in-class discussion grades will be dropped.*
- Current events essays (20%):** [SLO 6, SI, CT. CRCs: Career and Self-development. Communication. Professionalism]  
Planetary science is happening now! Each Monday, we will discuss current events in planetary science. You are required to bring to class and turn in a summary of a current event in planetary science. This topic will most likely be a news event from the past week, but could also be a summary of *new* results from a currently active mission. The summary must be written *in your words*, include an *explanation for why it is relevant to planetary science*, and include *the primary source (e.g., website URL)*. Images or printouts of web pages may *accompany* your summary, but the summary itself must be in your own words.  
*No make-ups will be offered for current events.  
Lowest 2 Current Event grades will be dropped.*
- Mid-term Exams (30%.):** [SLOs 1-6; SI, QR. CRCs : Career and Self-development. Critical Thinking. Professionalism]  
Three ~monthly exams on the lecture and current events materials will provide an opportunity to demonstrate individual understanding of the material. These exams may include: objective, fill-in-the-blank questions; drawing and / or labeling diagrams; calculations and/or mathematical reasoning; articulating in short answer questions reasonable means for testing given hypotheses; and matching of planetary missions with their technology, data types and approach for the data analyses, and discoveries.  
*If you miss an exam due to an unexpected emergency, get in touch with me right*

## SYLLABUS for AST/GLG 190 – The Planets Fall 2023 - MWF 12:40 – 1:30 pm

*away and we will discuss whether an accommodation is appropriate. No make up exams will be offered after graded exams are turned back (usually within a week of the exam). If you know beforehand that you'll miss an exam, let me know before the exam and see the note below about Institutional Excuses.*

- v) Final exam (15%): [SLOs 1-6, SI, QR. CRCs : Career and Self-development. Critical Thinking. Professionalism]

The final exam will synthesize course material, pulling together everything covered during the semester. The final exam may include questions from the three ~monthly exams, including: objective, fill-in-the-blank questions; drawing and / or labeling diagrams; calculations and/or mathematical reasoning; articulating in short answer questions reasonable means for testing given hypotheses; and matching of planetary missions with their technology, data types and approach for the data analyses, and discoveries.

*If you miss an exam due to an unexpected emergency, **get in touch with me right away** and we will discuss whether an accommodation is appropriate. No make up exams will be offered after graded exams are turned back (usually within a week of the exam). If you know beforehand that you'll miss an exam, let me know before the exam and see the note below about Institutional Excuses.*

NAU significantly updated the Institutional Excuse policy this year. This policy governs when and how to get approval for missing class due to extended illness, military service, religious observances, bereavement, and other life events. Please see the following website for information and forms: <https://in.nau.edu/academic-affairs/institutional-excuses/>

The Dean of Students is an excellent resource for students. Their website on missing classes can be very helpful for navigating what steps to take if you have to miss classes: <https://in.nau.edu/dean-of-students/absence/>

**Attendance:** Attendance will not be taken in lecture. However, students who are frequently absent will do poorly because 1) they have less opportunity to hear/discuss material, 2) they will miss in-class discussions, which are graded, 3) they will miss material that is not covered in the book, for example, about on-going missions and new discoveries, *material that may well appear on quizzes or exams*, and 4) current events must be turned in during class, in person.

**Course grade summary:** Your final grade will be determined as follows:

Three exams (10% each):	30%	
Final:	15%	
Quizzes:	15%	[lowest 2 quiz grades will be dropped]
Discussions:	20%	[lowest 2 discussion grades will be dropped]
Current Events:	20%	[lowest 2 CE grades will be dropped]
Total:	100%	

<b>Grading Scale:</b>	89.5-100%	→	A
	79.5-89.49%	→	B
	69.5-79.49%	→	C
	59.5-69.49%	→	D
	≤ 59.49%	→	F

## SYLLABUS for AST/GLG 190 – The Planets Fall 2023 - MWF 12:40 – 1:30 pm

**Extra Credit:** [CRCs: Career and Self-development. Critical Thinking. Communication. Professionalism.] I am more than happy to reward excellence, creativity, and extra work. I therefore encourage everyone to go beyond what we learn in lecture, particularly if some topic really excites you. To earn extra credit:

- A. develop an idea that would: 1) enhance your understanding of the material and 2) contribute to the learning environment of the class.
- B. Then discuss it with me and we will decide if it is appropriate and negotiate how much extra credit the project will be worth (typically 1% on the final grade for a standard project).

**Limits:** *Each person can earn no more than 8% total extra credit for the semester. Only one extra credit project per week per person is allowed (i.e., you cannot wait until the last week of classes and turn in multiple projects). The last day of classes (Dec 8) is the last possible time to turn in any extra credit – absolutely no exceptions.*

**Potential extra credit ideas:** Original artwork, poetry, prose, engineering design, etc., inspired by something related to planetary science. One page (single spaced, 12 pt font) summary of one of the lectures from an approved planetary science lecture series (e.g., <http://www.seti.org/talks>) or any relevant talk at NAU. An innovative presentation to explain some topic from lecture. Group projects will be considered.

**Office Hours:** These hours (listed at the top of the syllabus) are times that I will be in my office prepared to talk with students and answer questions about the class. Feel free to drop by during office hours, or e-mail to make an appointment outside of these hours.

### Readings and Materials:

Primary “Textbook”: Astronomy (OpenStax) – <https://openstax.org/details/books/astronomy>

Other Resources: <https://nineplanets.org/>  
<https://solarsystem.nasa.gov/solar-system/our-solar-system/overview/>  
<http://explanet.info/>

Primary readings identified in the schedule below by chapter and section numbers refer to the primary online textbook – OpenStax Astronomy. For some topics, the “other resources” provide information better suited to this course. In those cases, the relevant sections from those resources are linked directly in the schedule. Students are always welcome to explore the other resources in more detail for all topic – seeing material presented in different ways helps the learning process. Additional readings may include a combination of chapters from other textbooks and possibly articles from the popular science literature and will be posted on the course Canvas website.

### Class Policies.

**Behavioral Standards of Conduct:** Please silence cell phones before class. Laptops, tablets, and/or phones may be used for class purposes (e.g., taking notes) *only*. Using devices for non-class purposes is distracting to students around you, and creating such disruption to the class learning environment is selfish and unacceptable. If devices are used in ways that are disruptive, the privilege of using them will be revoked (i.e., they will no longer be allowed) for those abusing the privilege.

Extensive research demonstrates that *the human brain cannot multi-task*. Our focus simply shifts back and forth from one task to the other, a switching process that takes time, and so we are less efficient at both tasks, and our brains get worse at switching the more we try to do it. In other words, it is not physically possible to both pay attention to lecture and do something else on your device. Your learning and understanding will be diminished.

*The information contained in this syllabus, other than this course’s grade and attendance policies, may be subject to change with reasonable advance notice.*



# SYLLABUS for AST/GLG 190 – The Planets

## Fall 2023 - MWF 12:40 – 1:30 pm

### How To Do Well in this Course

1. BEFORE class: read assigned chapters, so you can ask questions about anything confusing.
2. IN class: pay attention and take good notes.
3. WEEKLY: meet in a study group with people who will actually study before you get together.
4. BEFORE EXAMS: review your notes, study the images in each chapter, and answer the review questions at the end of each chapter as well as the sample exam questions I will provide.
5. *Ask questions!* Ask in or before/after class, email me, ask your lab TA, ask the tutor, make an appointment for my office hours, ask your classmates.
6. Try to understand concepts and processes – don't just memorize definitions (although you'll need to have a general idea of what words mean for exams).

#### Advice from former students:

*On reading the textbook and preparing for lecture:* "I read the text prior to lecture and take notes during lecture on a hard copy of the power point presentation."

*On attending lectures:* "GO TO CLASS! Attending class helps me immensely."

"It's not even taking notes a lot of times, it is more just sitting there and actively paying attention to what you are saying. I believe it helps to hear someone say it."

*On keeping up with the course:* "You can't learn it all the night before. I split up all my classes so I study something everyday (except Friday is my day off)."

*On studying for exams:* "I reviewed my highlighted and marked-up copies of lecture slides"

"When test time comes you have to dedicate a good amount of time to studying. I study two separate days. You can't expect to learn it all at once. I found having a study partner helps. If you can explain it and teach it to someone else then you have mastered it. Plus, it can help you with tough concepts."

### COURSE SCHEDULE

Week	Day, Item	Lecture Topics	Text Readings*	Assignment Due
8/28	M, Lecture	Introduction & The Solar System	Chapter 7.1 The rest of Chapter 7** <a href="http://exoplanet.info/Chapter01.htm">[http://exoplanet.info/Chapter01.htm]</a> **	
	W, Lecture	Syllabus & Scientific Method	Syllabus, <a href="https://undsci.berkeley.edu/article/intro_01">[https://undsci.berkeley.edu/article/intro_01]</a> **	Syllabus Quiz (Quiz #0)
	F, discussion	<i>Scientific Method Discussion</i>	<i>same as previous class</i>	<i>Discussion 1</i>
9/4	M	<b>No Class – Labor Day</b>		
	W, Lecture	Here and Now Celestial Motions	Chapter 1 (1.6 – 1.9) Chapter 2 (2.1) Chapter 4	Quiz #1
	F, discussion	<i>Celestial Motions discussion</i>	<i>same as previous lecture</i>	<i>Discussion 2</i>
9/11	M, Lecture	Gravity	Chapter 3	CE #1
	W, lecture	Observing Remotely (Light, Telescopes, Spacecraft; Atoms & Spectra)	Chapter 5 (all) Chapter 6 (all)	Quiz #2
	F, discussion	<i>Observing Remotely discussion</i>	<i>same as previous lecture</i>	<i>Discussion 3</i>
9/18	M, Lecture	Understanding Matter	Morrison & Owen, Chapter 3 (Canvas) <a href="http://exoplanet.info/Chapter02.htm">[http://exoplanet.info/Chapter02.htm]</a> **	CE #2
	W, Lecture	Formation of Planetary Systems	Chapter 7.4 Chapter 14 (14.3, 14.4)	Quiz #3

**SYLLABUS for AST/GLG 190 – The Planets**  
**Fall 2023 - MWF 12:40 – 1:30 pm**

	F, discussion	<i>Formation of Planetary Systems discussion</i>	<i>same as previous two lectures</i>	<i>Discussion 4</i>
9/25	M, Lecture	The Sun	Chapter 15 (15.1) (15.2**, 15.3**, 15.4**) Chapter 16 (16.2, 16.3) (16.1**, 16.4**)	
	<b>W, Exam</b>	<b>EXAM #1</b>		
	F, Lecture	Earth	Chapter 8 (8.1–8.3) (8.4**) <a href="http://explanet.info/Chapter08.htm">http://explanet.info/Chapter08.htm</a>	
10/2	M, Lecture	Earth – <i>guest lecturer</i>	<i>same as previous class</i>	CE #3
	W, Lecture	Impacts – <i>guest lecturer</i>	Chapter 9.3, Chapter 8.5	Quiz #4
	F, discussion	<i>Earth discussion – guest lecturer</i>	<i>same as previous lecture</i>	<i>Discussion 5</i>
10/9	M, Lecture	Meteorites / Asteroids	Chapter 14 (14.1, 14.2) Chapter 13 (13.1, 13.2)	CE #4
	W, Lecture	Asteroids / Comets	Chapter 13 (all)	Quiz #5
	F, discussion	<i>Meteorites, Asteroids, and Comets discussion</i>	<i>same as previous two lectures</i>	<i>Discussion 6</i>
10/16	M, Lecture	The Moon	Chapter 9 (9.1 – 9.4)	CE #5
	W, Lecture	Mercury	Chapter 9 (9.5)	Quiz #6
	F, discussion	<i>Moon &amp; Mercury discussion</i>	<i>same as previous two lectures</i>	<i>Discussion 7</i>
10/23	M, Lecture	Venus	Chapter 10 (10.1–10.3, 10.6)	
	<b>W, Exam</b>	<b>EXAM #2</b>		
	F, Lecture	Mars	Chapter 10 (10.1, 10.4–10.6)	
10/30	M, Lecture	Mars	<i>same as previous lecture</i>	CE #6
	W, Lecture	Overview of Outer Solar System & Giant Planets – <i>guest lecturer</i>	Chapter 11 (all)	Quiz #7
	F, discussion	<i>Mars discussion – guest lecturer</i>	<i>same as previous two lectures</i>	<i>Discussion 8</i>
11/6	M, Lecture	Satellites of Jupiter	Chapter 12 (12.1, 12.2, 12.5)	CE #7
	W, Lecture	Satellites of Jupiter (continued)	Chapter 12 (12.1, 12.2, 12.5)	Quiz #8
	<b>F</b>	<b>No Class – Veteran’s Day</b>		
11/13	M, Lecture	Satellites of Saturn	Chapter 12 (12.1, 12.3, 12.5) <a href="https://nineplanets.org/saturn/">https://nineplanets.org/saturn/</a> (Moons)	CE #8
	W, Lecture	Satellites of Uranus – <i>guest lecturer</i>	Chapter 12 (12.1) <a href="https://nineplanets.org/uranus/">https://nineplanets.org/uranus/</a> (Rings and Moons)	Quiz #9
	F, discussion	<i>Outer Solar System discussion – guest lecturer</i>	<i>same as previous two lectures</i>	<i>Discussion 9</i>
11/20	M, Lecture	Satellites of Neptune	Chapter 12 (12.1, 12.3) <a href="https://nineplanets.org/neptune/">https://nineplanets.org/neptune/</a> (Rings and Moons)	CE #9
	W, Lecture	NASA’s OSIRIS-REx & Lucy missions	<a href="https://www.asteroidmission.org/">https://www.asteroidmission.org/</a> <a href="http://lucy.swri.edu/">http://lucy.swri.edu/</a>	
	<b>F</b>	<b>No Class – Thanksgiving</b>		
11/27	M, Lecture	Review		
	<b>W, Exam</b>	<b>EXAM #3</b>		
	F, Lecture	Kuiper Belt (including Pluto) – <i>guest lecturer</i>	Chapter 12.4 <a href="https://solarsystem.nasa.gov/solar-system/kuiper-belt/in-depth/">https://solarsystem.nasa.gov/solar-system/kuiper-belt/in-depth/</a>	
12/4	M, Lecture	Extra-solar planets	Chapter 21 (21.3–21.6)	CE #10
	W, Lecture	Life in the Universe	Chapter 30 (all)	Quiz #10
	F, discussion	<i>Extra-solar planets and Life discussion</i>	<i>same as previous two lectures</i>	<i>Discussion 10</i>

\* Readings may be modified during the semester. Changes will be announced in class and by e-mail.

**SYLLABUS for AST/GLG 190 – The Planets**  
**Fall 2023 - MWF 12:40 – 1:30 pm**

\*\*These readings are recommended to support broad comprehension, but not required for lecture.

**Final Exam – Monday, Dec 11, 12:30 – 2:30 pm**



**SYLLABUS for AST/GLG 190 – The Planets**  
**Fall 2023 - MWF 12:40 – 1:30 pm**



**SYLLABUS**  
**REQUIREMENTS**

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**SYLLABUS POLICY STATEMENTS**

**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>.

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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

## **SYLLABUS for AST/GLG 190 – The Planets**

### **Fall 2023 - MWF 12:40 – 1:30 pm**

“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](mailto: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](mailto: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](mailto: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](mailto:jamie.axelrod@nau.edu).

**SYLLABUS for AST/GLG 190 – The Planets**  
**Fall 2023 - MWF 12:40 – 1:30 pm**

**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](mailto: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.

Last revised August 4, 2022