The Solar System with Laboratory
Fall 2025 Syllabus Physics 1052 Section 400

Meet Your Instructor

Dr. Megan Nieberding
(she/her/hers), Instructor

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Help Sessions: *Monday from 2-3pm* on Teams and in person,
Thursday from 11am-noon on Teams and in person,
or by appointment.

My research background is Physics Education Research, which focuses on developing and implementing teaching strategies that improve student learning in Physics courses. I am passionate about making physics and astronomy a better learning environment for students…especially given the reputation that physics has! I hope by the end of the semester you have an appreciation for astronomy and the solar system and I look forward to working with you this semester.

Key Information

Credit hours: 3	
Class Meeting Times:	**Course Websites:**
Asynchronous and	Canvas,
Fully online	University of Mars software, and
	SLOOH (the robotic telescope website)

Frequently Asked Questions:

1) What am I going to learn?

(Course Description, Structure, and Objectives)

This introductory astronomy course offered by the UNT Physics Department covers the basics of motion and gravity and what we see in the nighttime sky, while exploring the planets of our solar system and the properties of stars and our Sun.

Course Objectives

This course is a part of the Life and physical sciences core. Courses in this category focus on describing, explaining and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences by fostering skills associated with the four core objectives:

- *Critical Thinking Skills*, including creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- *Communication Skills*, including effective development, interpretation and expression of ideas through written, oral and visual communication
- *Empirical and Quantitative Skills*, including the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- *Teamwork*, including the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Course Structure

This class is classified as "Fully online". To fully participate in this class, students will need internet access to reference content on the Canvas Learning Management System and utilize the University of Mars and SLOOH learning platforms.

2) What do I need to buy?

Required Materials

I know that college can be expensive, so I am only asking you to buy two things:

- **University of Mars (https://theastroventure.com/)**

This is our online lecture platform. You will begin the semester by downloading the "University of Mars Video Game" program from the AstroVenture website. The cost is $40. Links and a README file with instructions are located in Canvas. You will begin your work by getting started with the game to learn the core astronomy concepts that will inform later lessons and reflections that will be due later in the semester.

- **Slooh (https://app.slooh.com/at/74AB3-51CA2)**

This is our online lab platform. You will work thorugh multiple Slooh quests to learn core astronomy concepts and you will follow in the footsteps of famos discoverers by using a robotic telescope system to take images of astronomical objects in order to complete your quests. The cost is $30.

3) Do I need anything else?

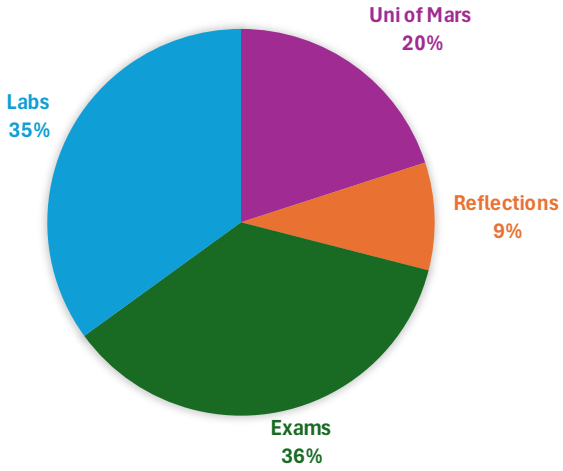
We will be using these FREE resources this semester:

- **OpenStax Astronomy textbook (https://openstax.org/details/books/astronomy-2e)**

This is a free college-level astronomy textbook. If you find that you want additional material that discusses the concepts covered in the University of Mars videogame, you can access this resource.

4) How will you determine my grade?

Assessing your Work



The **University of Mars video game** accounts for 20% of your total grade. The game is organized into three units, each containing three parts, for a total of nine parts. For example, Unit 1 will have a part 1, 2, and 3. As you complete each part, you'll unlock a chunk of your grade—and probably some cool gameplay moments along the way. Completing each part of a unit will be worth approximately 2% of your total grade.

After finishing each of the three Units in the University of Mars game, students will complete a **Reflection** based on the game's story and lessons. Each Reflection is worth 2.5% of the total grade. Once all reflections are submitted, students will also complete two rounds of peer rankings, which together count for 0.5%. Reflections will account for 9% of your total grade.

There will be **3 Unit exams**, each corresponding to one of the main Units in the University of Mars game. Each exam will count for 12% of the final course grade, totaling 36% overall.

Labs—referred to as "Quests"—will make up 35% of your final course grade. You'll complete 7 Quests throughout the semester using the SLOOH platform, with each Quest contributing approximately 5% toward your overall grade.

6) When are the exams?

The midterm exams will be open for a 4 day window (Tuesday-Friday). Exams will open at 12 AM on Tuesdays and close at 11:59PM on Fridays. Exact dates can be found on Canvas.

7) When are assignments due?

The majority of the University of Mars assignments are to be completed on Mondays at 11:59pm. Reflections will be due after the completion of the third Part of each Unit in the University of Mars game. Lab assignments will be due on Fridays at 11:59pm. Please see the calendar on Canvas for specific dates.

Late policy: Except in cases of documented emergency, authorized absence, etc., assignments are expected to be completed by their respective due dates.

8) What are the cutoffs for letter grades?

The final class grade depends on your total class percentage. If you accumulate

90.0 – 100%, you will receive an A
80.0 – 89.9%, you will receive a B
70.0 – 79.9%, you will receive a C
60.0 – 69.9%, you will receive a D, and
< 60.0 %, you will receive an F.

Grades on the border of a letter grade will not be bumped unless the student has completed the Exam Wrappers. There will be 3 Exam Wrappers after each semester exam. Each completed Exam Wrapper will add up to +0.7% of your final course grade. So, if a student completes 3 Exam Wrappers, the student can increase their final course score by up to 2.1%.

9) How will I be graded on the University of Mars game?

Play through the University of Mars video game, completing "Parts" of the game's three "Units" by their respective due dates. The game's Units are divided into 3 parts each, and there are intermediate deadlines for completing each part. The complete schedule is attached to the end of the syllabus and located in Canvas.

Please set aside ample time to play the game, so that you can proceed through it thoughtfully and not in a rush. As a rough estimate, anticipate each "Part" requiring an hour or two of work to go through, thoroughly; some Units or Parts may take less time, and others a little more. Your score for the completion of the video game will depend on your accuracy as you answer the in-game quizzes.

The in-game lessons, questions, and mini-games are designed to help give you an introduction to each astronomy subject in a logical progression — more complex topics later, building on the earlier ones — and to give you some practice applying that knowledge. We strongly encourage you to re-play sections of the game for additional practice or study. A "Repeat a Lesson" menu option in the game gives you access to review any previously completed section, and an in-game robot character ("Copper") can give you practice quizzes.

Grading for game progression will be as follows:

20% for the first attempt score and 80% for your final attempt.

So for example, if you earn a 0% the first attempt through the lesson, you can repeat the lesson to earn a higher score. But this time, your max score you can earn the second, third, or final attempt will be a maximum of 80%. If you earn a 0% the first time through the lesson and you do not decide to repeat the lesson, your grade for that particular part will be a 0%.

10) What will be covered on the Unit Exams?

You will have 3 Unit Exams to complete throughout this semester. Test 1 covers Unit 1 of the University of Mars game, Test 2 covers Unit 2 of the game, and Test 3 covers Unit 3 of the game. Some of the questions on these tests are pulled directly from quiz questions given in the game; others are very similar but slight variations on ones in the in-game quizzes. Other kinds of questions may ask you to identify an astronomical object in a picture, or choose the correct point on a plot, and so on — like the mini-games and exercises you go through in University of Mars.

A set of Review Notes is given for each Test, in Canvas. We suggest getting a copy early for each test, to look over as you go through the game. The Review Notes will give a good impression of what are the key points in each lesson.

There is also a set of practice test questions given for each Test. You might try these out as if it were the real test, going through them without notes or other references. Score yourself, paying attention to which questions you missed, and also which you may have gotten correct but were unsure of or guessed; this will help you target your further study towards subjects that may be more challenging.

11) Can I use Generative AI in this course?

Students in my physics and astronomy courses have shared that they like to use GenAI as a partner in learning. Students shared that they have conversations by asking questions ("Was there ever water on the surface of Mars?") or get help with math by giving it a specific question ("How do you find the acceleration of an object with a mass of 2 kg that experiences a net force of 10 Newtons?"). While I am mostly confident that GenAI will give you correct answers to these questions, I have seen examples where it gives super wrong answers. So, while I encourage you to use this tool to help you study, maintain a critical eye, ask it to give you sources, and reach out if the information you get seems to contradict something we learned in class or does not make sense.

You may <u>not</u> use Generative AI in this course to help you compose your Reflections or answers to questions in the University of Mars game or Slooh quests. You may use a tool to check your original written work for grammar/clarity. It is my expectation that the content you submit in this course is your original work.

I will always disclose how I use GenAI, and I expect the same from you. In accordance with the UNT Honor Code, unauthorized use of GenAI tools is prohibited. Using GenAI content without proper credit or substituting your own work with GenAI undermines the learning process and violates academic integrity. If you're unsure whether something is allowed, please seek clarification.

Please refer to the Academic Integrity Policy (PDF) (https://policy.unt.edu/policy/06-049).

12) What if I need help in this course?

Astronomy Help

Some of the concepts we're learning are challenging. If you don't understand them at first, that doesn't mean you can't succeed. Learning is a process and there are many ways to get help for this class.

If you find yourself needing help after attempting the homework or studying on your own, please know there are multiple options available to you.

- Online Help Sessions
    - During my online help sessions, I will be available to answer any questions via Teams. The link for this can be found under "Online Help Sessions, Tutoring, and Other Student Support" on the course Canvas page. When a student joins office hours, I am often able to help them solve their problem or clear up a misconception in just a few minutes. Students will often tell me that they spent a lot of time (sometimes hours) trying to figure it out on their own before joining office hours. There is no need to do that – let's work together!
    - You can also reach out to your TA to request time to meet and discuss course content.

- If my virtual help sessions conflict with your schedule, feel free to schedule an appointment via email. I will respond to emails regularly between the hours of 9 AM – 5 PM Monday through Friday and will do my best to respond in a timely fashion on the weekend and in the evening.
- If you have emailed me and I have not responded within 48 hours, please feel free to reach out to me again making sure I got the email. I teach over 300+ students and it is easy for an email to slip by.

- **FREE tutors** provided by the **Physics Instructional Center**
  - The goal of the Physics Instructional Center (PIC) is to provide students with the tools necessary to expand their knowledge of the world of astronomy and physics. Here you will be able to meet with undergraduate tutors to discuss any questions you may have about content in this course.
  - The PIC is located in Hickory Hall room 266.
  - The most up to date hours of operation of the PIC can be found on the PIC's website (https://physics.unt.edu/undergraduate-studies/pic.html)

Policies

1) Accommodations

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time; however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website (https://studentaffairs.unt.edu/office-disability-access). You may also contact ODA by phone at (940) 565-4323.

2) Supporting Your Success and Creating an Inclusive Learning Environment

I value the many perspectives students bring to our campus. Please work with me to create a classroom culture of open communication, mutual respect, and belonging. All discussions should be respectful and civil. Although disagreements and debates are encouraged, personal attacks are unacceptable. Together, we can ensure a safe and welcoming classroom for all. If you ever feel like this is not the case, please stop by my office and let me know. We are all learning together.

3) Technical Support

The UIT Helpdesk will provide support with any issues you might have with Canvas and they may be able to help you troubleshoot other computer issues. 940-565-2324 or helpdesk@unt.edu. Canvas does not work well with some browsers. Chrome browser does support Canvas and MasteringAstronomy.

4) Syllabus Changes

The professors reserve the right to make changes to the syllabus including assignment due dates and test dates. These changes will be announced as early as possible on Canvas.