General Astronomy

ASTR 2115

Instructor Info

Prof. Diana Dragomir

PAIS 3226

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Course Info

Math 1240 or 1512. Physics 1230 or higher. ASTR 2110. We will learn some physics concepts and make use of high-school level algebra and trigonometry, but will not use calculus.

Tue & Thu

11:00am - 12:15pm

PAIS 2540

Office Hours

By appointment (or after class).

PAIS 3226

TA Info

Evan David

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Course Overview

Astronomy 2115 is a general astronomy course at a greater level of detail than is covered in Astronomy 1115. ASTR 2110 and 2115 are also the first required ASTR classes for BS Astrophysics majors. ASTR 2115 is also required for the BA in Physics and Astrophysics. This course will describe the nature of the Universe starting with stars and working up through star clusters, galaxies, clusters of galaxies and superclusters. Black holes, pulsars, supernovae, dark matter, the expanding Universe and other fascinating astronomical topics will also be explored. We will use math and physics as we explore the Universe.

About Me

I am an observational astronomer whose focus is on exoplanets. I aim to measure the properties of exoplanets, and how these properties correlate to the planets' formation and evolution. It turns out that a fuller understanding of exoplanets requires also an understanding of the history and properties of their host *stars*, and even of the details of their galactic environment. Therefore I have a keen interest in astronomy at all scales, and I look forward to sharing that with you.

Material

Required Text

Universe, Freedman, Geller and Kaufmann, 11th edition. University Science Books. 2019. (ISBN: 9781319039448, eBook ISBN: 9781319227975)

Required Other Material

Zoom app.
Writing tools.
Non-programmable scientific calculator.

Credit-hour statement

This is a three credit-hour course. Class meets for two 75-minute sessions of direct instruction for the equivalent of 15 weeks during the Fall 2026 semester. Please plan for a minimum of six hours of out-of-class work (or homework, study, assignment completion, and class preparation) each week.

Grading Scheme

The details of the grading scheme and grading components could be subject to minor changes, but if so I will inform the class ahead of time during lectures and via email, and ensure that all students agree with the changes.

1%	**Syllabus Quiz**
15%	**Zoom questions**
1%	**Image interpretation**
5%	**Astro News presentation**
18%	**Homework Assignments**
20%	**Quizzes**
15%	**Midterm**
25%	**Final Exam**

Grades will follow the following scale:
A = 87-100;
B = 75-86.9;
C = 65-74.9;
D = 55-64.9;
F <55.
Note: If you take this class "Credit/No Credit", according to university policy, your final grade must be a "C" or better in order to receive credit.

Attendance and Zoom Questions

Every class there will be one or more multiple choice questions that you will answer through Zoom. These questions are for both you and I to gauge how well specific concepts taught in that class were understood. If you answer the questions in at least 25 classes (correctly or not), you will get 10% of your final grade. Answering those questions correctly will earn you up to the remaining 5%, for a total of 15% of the final grade for the in-class Zoom questions. Note that there are 30 classes in the fall term. Given that one full class will be taken up with the midterm, this means you may miss up to **four** classes and still potentially get full marks for the Zoom questions.

Astro News Presentation and Image Interpretation

Each Thursday when we have class (except the midterm Thursday) and on Tuesdays when there is no quiz, we'll spend the first 5–10 minutes of class **on a current astronomy news item connected to the topics of the previous two lectures**. Each time, one student (on a rotating schedule) will present a real, recent (from the past year) finding announced in a press release, in 5 minutes: what was found, how, why it matters, and one open question it raises; bonus points can be earned for a discussion of "how confident should we be in this result, and why?". This will be followed by a few minutes for questions and discussion. I'll seed the first week myself with examples so you can see the expected format. Good sources: NASA/ESA press releases, phys.org, ScienceDaily, AAS Nova. Occasional quiz questions may draw on recent News Bites, so it's worth paying attention even on weeks you're not presenting.

Approximately once (sometimes twice) a week, I will show a real astronomical image related to the topic of that lecture and ask a student to come to the front of the class and interpret the image. This will count for 1% of your final grade. I will demo this in week 1.

Homework Assignments

There will be 6 homework assignments spread out over the course of the semester. They will be due every 2 or 3 weeks. They will be posted on the course webpage/UNM Canvas. Homeworks are to be submitted online on UNM Canvas using the appropriate link provided there. Upload the entire homework in a single file. **Credit for late homeworks will drop by 15% for every day late within a week, and no credit thereafter.**

Please note the AI policy below.

Quizzes, Tests and Final Exam

The rest of the grade will be split between six quizzes lasting no more than 15 minutes each (for a total of 20% of your grade); one test lasting a full class (15%); and a final exam (worth 25%) during finals week. Note that only your best four out of six quizzes will count (so 5% of your grade per quiz). The quizzes will be scheduled on Thursdays when homework is due. They will generally include questions from the homework you have just submitted, though occasionally questions may draw on recent Astro News Bites.

Learning Goals

Upon successful completion of this course, students will be able to:

- Estimate the distance to stars, galaxies, and other astrophysical objects.
- Demonstrate an understanding of the evolution of stars and galaxies.
- Explain how astronomers measure the basic propertes of stars and galaxies.
- Explain the standard big-bang cosmological model.
- Evaluate new discoveries in astronomy.
- Apply evidence-based reasoning to scientific questions and data interpretation, and present it in oral form.

Course Materials Access

Your digital course materials are directly available now on the My Shelf link in Canvas. Your physical course materials, such as books and required lab/studio course kits, are available at the UNM Bookstore, and you will receive an email about how to pick them up. To simplify your course materials access, you are automatically enrolled in a Complete option at a flat rate of $279 per semester. This will show up on your bursar bill. The Complete option covers all your required course materials for all your Albuquerque campus courses, including any graduate courses you may be taking (branch campus course materials are billed and available separately). If you are interested in course materials access for only selected courses, or if you want to opt out entirely, you will need to select the option you want in the My Shelf link in Canvas. You can change your selected option in the My Shelf link in Canvas until the registrar's "Last Day to Drop Without a 'W' Grade and 100% Tuition Refund". Make sure that you review the video and information here to understand cost and the options for Complete (automatic enrollment), Select (take action), and Opt-out (take action).

Academic Integrity

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

Cheating and plagiarism (academic dishonesty) are often driven by lack of time, desperation, or lack of knowledge about how to identify a source. Communicate with me and ask for help, even at the last minute, rather than risking your academic career by committing academic dishonesty. Academic dishonesty involves claiming that work created by another source is your own original work. It is a Student Code of Conduct violation that can lead to a disciplinary procedure. When you use a resource in work submitted for this class, document how you used it and distinguish clearly between your original work and the material taken from the resource.

Generative AI Use

In this course, I will provide you with course-level and/or assignment-level guidance or directions for how and when to use and disclose generative artificial intelligence (AI) tools for submitted work. My goal is to support you in building your AI literacy skills and making informed and critical choices in how and when to use AI to the benefit of your learning and future professional development. You may not use AI tools for in-class assessments unless I explicitly permit it for a given activity. You may use AI tools to prepare for in-class assessments - e.g., to generate a study guide, to request practice questions or problems, to obtain feedback on a presentation after you've created it. You may also use AI tools in limited, disclosed ways for homework ? e.g., to check your grammar, to have a concept re-explained after you?ve attempted it yourself. You may not have an AI tool to generate any of your homework solutions.

Generative AI is a type of AI that refers to technologies that generate text, images, audio, video, code, or other content in response to user prompts. You should acknowledge meaningful generative AI assistance when you submit work. A brief statement is sufficient. For example: "I used ChatGPT to help brainstorm possible paper topics and revise my introduction for clarity. I reviewed and edited the final version myself." or "I used Adobe Firefly to generate an illustrative image for my presentation. I revised the slide design myself and verified that the image was appropriate for the assignment."

You do not need to disclose minor uses such as spelling correction, sentence-level grammar correction, citation formatting, basic image cropping, basic color correction, file conversion, or accessibility-related tools related to an accommodation documented with UNM Accessibility Resource Center, unless an assignment specifically requires disclosure. You remain responsible for the quality and appropriateness of the work you submit, including AI-generated content. You may not use AI to misrepresent your learning, fabricate sources or data, create misleading images or visual evidence, submit work you do not understand, or avoid the intellectual or creative work the assignment is designed to support. UNM?s Academic Integrity Guide for Students applies to AI-assisted work.

You should not enter private, confidential, regulated, or sensitive information into AI tools unless the tools and use have been approved by UNM for that purpose. This includes personally identifiable information, peer or instructor-created work, nonpublic community data, private chat logs, and images, voice recordings, or likenesses of real people without appropriate permission.

If you have questions about what constitutes appropriate AI use, please ask.

Accommodations

UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact Accessibility Resource Center at arcsrvs@unm.edu or 505-277-3506.

If you need an accommodation based on how course requirements interact with the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment we can discuss the course format and requirements, anticipate the need for adjustments and explore potential accommodations. I rely on the Accessibility Resource Center for assistance in developing strategies and verifying accommodation needs.

UAP 2720 and 2740: Our classroom and university should foster mutual respect, kindness, and support. If you have concerns about discrimination, harassment, or violence, please seek support and report incidents. Find confidential services at LoboRESPECT Advocacy Center, the Women's Resource Center, and the LGBTQ Resource Center. UNM prohibits discrimination

on the basis of sex (including gender, sex stereotyping, gender expression, and gender identity). All instructors are “responsible employees" who must communicate reports of sexual harassment, sexual misconduct and sexual violence to Compliance, Ethics and Equal Opportunity. For more information, please see UAP 2720 and UAP 2740.

Respectful Behavior and Absences

Respectful Conduct Expectations: I am committed to building with you a positive classroom environment in which everyone can learn. I reserve the right to intervene and enforce standards of respectful behavior when classroom conduct is inconsistent with University expectations and classroom community agreements. Interventions and enforcement may include but are not limited to required meetings to discuss classroom expectations, written notification of expectations, and/or removal from a class meeting. Removal from a class meeting will result in an unexcused absence. The University of New Mexico ensures freedom of academic inquiry, free expression and open debate, and a respectful campus through adherence to the following policies: D75: Classroom Conduct, Student Code of Conduct, University Policy 2240 - Respectful Campus, University Policy 2210 - Campus Violence.

COVID-19, Flu or Other Illness

If you are experiencing symptoms of COVID-19, flu, or other severe contagious illness, please do not come to class. If you do need to stay home, please communicate with me at dragomir@unm.edu; I can work with you to provide alternatives for course participation and completion.