











General Astronomy ASTR 2115



Instructor Info —

-  Prof. Diana Dragomir
-  Zoom
-  exoplanets.unm.edu
-  dragomir@unm.edu

Course Info —

-  Math 150 or 162. Physics 151 or higher. 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
-  Zoom

Office Hours —

-  Tue: 2:30 - 3:30pm
Wed: 9:00 - 10:00am
-  Zoom

TA Info —

-  Ismael Mireles and Craig Taylor
-  Mon: 12-1pm; Fri: 12-1pm
-  Zoom
-  mirelesi@unm.edu
-  ctaylor98@unm.edu

Course Overview

Astronomy 2115 is a general astronomy course at a greater level of detail than is covered in Astronomy 101. 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 spring 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 (particularly, but not exclusively, sub-Jovian 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)

Grading Scheme

Preliminary. 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 UNM Learn.

10%	Class Participation (via zoom question polls)
25%	Homework Assignments
25%	Mid-term Exam
25%	Final Exam
15%	Final Project

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.

Class Participation

Every class there will be one or more multiple choice questions through Zoom polls. These questions are for both you and I to gauge how well specific concepts taught in that class were understood. You do not need to answer correctly in order to obtain the participation points, but you do need to participate in the polls for *at least 20 classes* for full credit. Your individual answers and participation in the poll will be anonymous to the rest of the class (though I may show the distribution of answers from the polls), but I will keep track of it using Zoom's poll reports feature. If you do answer correctly, you will obtain extra credit that will allow you to increase your final grade by up to 5%. To obtain the maximum extra credit, you must answer correctly at least one quiz question per class in 20 classes.

Homework Assignments

There will be ten homework assignments spread out over the course of the semester. They will be due every 1 - 1.5 weeks. They will be posted on the course webpage/UNM Learn. Homeworks are to be submitted online on UNM Learn using the appropriate link provided there. Credit for late homeworks will drop by 15% for every day late within a week, and no credit thereafter.

Final Project

Each student will choose a piece of media (likely movies or possibly tv shows) from a list (to be provided at a later date, together with detailed instructions) and prepare a "critique", either as a recording or powerpoint presentation. The project will be due on the day of the second-to-last class (on "May the Fourth").

Learning Goals

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

- Successfully practice the "scientific method" during the course.
- Use physical principles to describe how stars and galaxies form and evolve over time.
- Learn and construct physical models of astronomical objects to explain observations.
- Recount the scientific story of the universe and our place and time within it.

Diversity and Inclusivity Statement

I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability - and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

Citizenship and/or Immigration Status: All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. UNM as an institution has made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our [website](#).

Title IX

A Note About Sexual Violence and Sexual Misconduct: As a UNM faculty member, I am required to inform the Title IX Coordinator at the [Office of Equal Opportunity](#) of any report I receive of gender discrimination which includes sexual harassment, sexual misconduct, and/or sexual violence. You can read the full [campus policy](#) regarding sexual misconduct. If you have experienced sexual violence or sexual misconduct, please ask a faculty or staff member for help or contact [LOBORESPECT](#).

Accommodations for Students with Disabilities

In accordance with University Policy 2310 and the Americans with Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as I am not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact [Accessibility Resource Center](#) at (505) 277-3506 for additional information.

If you need an accommodation based on how course requirement 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. If you have not previously contacted them I encourage you to do so.

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.

Respect the UNM Community by Preserving Health

You have the ability to prevent the spread of COVID-19 and to preserve the health of fellow students, your instructor, staff and the community by following UNM health protocols. The UNM Provost Administrative Directive on Mandatory Student Face Covering and Symptom Reporting of July 9, 2020 requires that all students on UNM-Main and UNM branch campuses wear face masks in the face-to-face classroom and on campus unless they have a specific mask accommodation (confidentially documented with the Accessibility Resource Center). UNM Provost Administrative Directive is consistent with Governor Lujan Grisham's Public Health Emergency Order, as amended, and the Public Health Order of the New Mexico Health Secretary. It also requires daily participation in symptom screening through covidscreen, which will be sent via UNM e-mail.

Acceptable masks and mask wearing in class: A two-layer mask that covers the nose and mouth and that is cleaned regularly is acceptable. A face shield is not sufficient protection. It is vital that you wear your mask correctly, covering your nose and mouth. Removing your mask for an extended period to eat or drink in class violates the Provost Administrative Directive and endangers others.

Mask Wearing Accommodation: Individuals with a documented disability or diagnosis may seek accommodation with the UNM [Accessibility Resource Center](#) (ARC). Individuals do not need to reveal private information to an instructor. ARC will require documentation of health requirements, which will be kept confidential. The instructor will be informed only of any need for accommodation.

Consequences of not wearing a mask properly: Unless you have an ARC-approved accommodation, if you don't wear a mask, or if you do not wear a mask properly by covering your nose and mouth, you will be asked to leave class. If you fail to wear a mask properly on more than one occasions, you can expect to be dropped from the class. If you insist on remaining in the classroom while not wearing a mask (without an ARC-determined accommodation), class will be dismissed for the day to protect others and you will be dropped from the class immediately.

This class may move to remote delivery at any time to preserve the health and safety of the students, instructor and community. Please check the course webpage regularly for updates about our class and please check the [Bringing Back the Pack website](#) regularly for general UNM updates.

Tentative Class Schedule

Week 1	Introduction; Blackbody radiation, light	Chap. 1 and 5
Week 2	Matter; Spectral lines; Doppler shift; the Sun	Chap. 5
Week 3	Stars	Chap. 16 and 17
Week 4	ISM; Star formation	Chap. 17 and 18
Week 5	Post main sequence evolution; Low mass stars	Chap. 19 and 20
Week 6	High mass stars; Neutron stars	Chap. 20 and 21
Week 7	Relativity; Black holes	Chap. 21
Week 8	Midterm Exam (3/9)	

Week 9 *Spring break*

Week 10 Black holes; Gamma Ray Bursts Chap. 21

Week 11 Milky Way; Galaxies Chap. 22 and 23

Week 12 Active galaxies; Quasars Chap. 24

Week 13 Clusters; Large Scale Structure Chap. 24

Week 14 Cosmology Chap. 25

Week 15 Cosmic Dawn; Early Universe Chap. 26

Week 16 End of the Universe Chap. 26



Final project due 5/4

