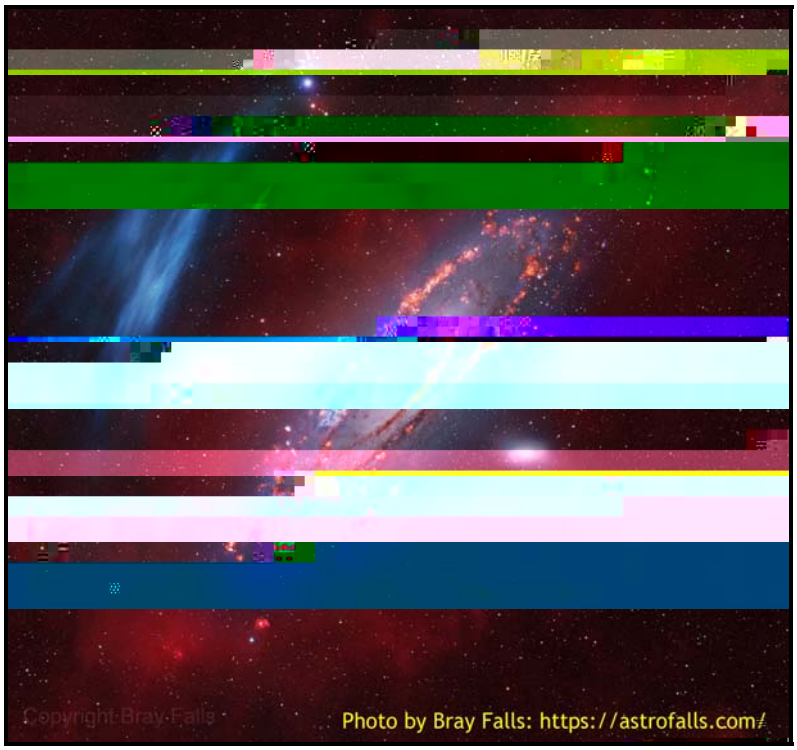
University of Alaska Fairbanks Fall 2024

Physics 165x

Introduction to Astronomy
4 Credits

Dr. Mark Conde



Major Discovery by a Team of Amateur Astronomers: This is a night-sky image recorded by amateur astronomer Bray Falls, showing one of the most intensely studied regions of the night sky. (Question: What is main object in this image?) Astonishingly, the image also shows (with stunning clarity and detail) two newly-discovered objects. (Question: Can you spot them?) Despite intense study of this region of the sky, and professional astronomers photographing it since the late 1800s, these new objects weren't known until a team of amateurs announced their discovery in August of 2022! This discovery is so new that the physical nature of these features remains unknown (as of Fall 2024.)

Video explaining story of this discovery: https://youtu.be/H9sqPHiCypE

[redacted]

- An experimental/laboratory component
- Consideration of the societal relevance of astronomy, and how it interacts with public policy

Major concepts and the scientific method will be discussed in lectures during the first few weeks, and you will apply these ideas in practice during the labs. The societal importance of astronomy will also be discussed in lectures, and a number of homework questions ask you to discuss issues of societal relevance. This course is not designated as Alaska Native Themed.

GER Natural Science courses are required to undergo regular Student Learning Outcomes Assessments. One of the consequences of this is that the University may request additional feedback from you regarding your assessment of the conduct and value of this course.

The course will be closely linked to the assigned textbook (*Universe*, 9th, 10th, or 11th editions) although at times we may cover the topics in a slightly different order.

Course goals and student learning outcomes

Upon completion of this course students will:

- Understand the tools and techniques of scientific study, and how these have been used to establish our current knowledge of the universe.
- Be familiar with the hierarchy of objects that make up the universe, how they are distributed through space, and how Earth is placed in this universe.
- Understand the basic nature of these objects – how they formed, how they behave, and what their ultimate fates are likely to be.
- Be familiar in particular with the solar-system objects that are our near neighbors in space and may one day provide additional options for human habitation and resource extraction.
- Appreciate the societal relevance of astronomy and its connection to other fields of science.

! ® e My goal as an instructor is to provide every student with maximum possi r in fл f ж l ъe

Office Manager:	Liya Billa:	Email: lkbilla@alaska.edu Office: Reichardt room 102 Phone: 474-7339	

Target schedule

Week	*Dates*	*Topics (from the textbook Universe)*	*Labs*
1			

network for your homework submission if you have limited or no internet access from your home.

Please realize that even if you submit a correct solution to a problem, your grader may not recognize it as correct if it's poorly presented. To maximize your chance of scoring well, your homework should:

- Be neatly laid out
- Be largely free from crossing-out and over-writing
- Include some verbal description explaining the approach and reasoning that you used to solve the problem
- Use grammatically correct English and be well enough written that the grader can understand what you're trying to say

If necessary, I may decide to delay the homework deadline dates, to ensure that we have covered the relevant material in class before tackling it as homework.

Exams and Quizzes

There will be six 20-minute quizzes during the semester and one two-hour final exam. The preliminary dates for these are

Quizzes:	Sep 12, Sep 26, Oct 10, Oct 31, Nov 14, and Dec 5.
Final:	1– 3p.m., Tuesday, December 10

Quizzes will be held in-person, at the end of every second Thursday's lecture, during the last 20 minutes of our regularly scheduled class time. Only your best 5 quiz scores will contribute to your final grade. Your lowest quiz score will be

Final grades will be returned as letter grades with plus/minus modifiers. These will be

The Physics Department typically offers opportunities for students to perform in-person make-ups for missed labs(s) during the last week of the semester. Students will normally be allowed to make up at least one missed lab this way. Making up more than one missed lab will be at the discretion of the lab teaching assistant – whether this is possible will depend on availability of lab equipment and TA time, both of which are in turn dependent on the level of demand for make-ups.

Textbooks

Required:

- *Universe*, 9th, 10th, or 11th Editions, by Freedman, Geller, & Kaufmann (W.H. Freeman & Co.)

Recommended additional reading: There are numerous excellent 100-level astronomy books available now. Any of the recent ones would likely be helpful for this course.

Note that online notes will be provided. However, these will make frequent reference to the more extensive treatment of topics that appears in the book.

Calculators

You will need access to a calculator to complete some of the homework problems. Calculators will also be permitted during quizzes and the final exam, although I rarely pose problems on these tests that require one. You will not need anything elaborate; an easy-to-use basic scientific calculator is all that you will need. Remember that it is much more important to present the correct reasoning for solving a problem than it is to arrive at the correct numerical value. Please, explain your reasoning when presenting solutions to homework and exam problems. I will award partial points for correct reasoning, if presented, even if the final answer is incorrect or incomplete.

Support Services

Homework help

I have set the weekly homework deadline to be on Friday evening. This was chosen so that you can (and shom e ~ T ⁎ G ɒrn Y H'rli ! ɹ ʜ D ulb ce

the Physics Department chair, D

Extended Absence Policy

The university of Alaska Fairbanks recognizes that students may need to miss more classes than allowed by a particular instructor as specified in course policies. Extended absences are defined as missed classes or course work by students beyond what is permissible by the instructor's written course policies. Students may need to miss class and/or course work for a variety of reasons, including, but not limited to:

- Bereavement
- Personal illness or injury
- Serious illness of a friend, family member or loved one
- Military obligations
- Jury service

b î / Ca ɻ b } ʊ l ʻ l' ˛ NM γ M

Syllabus Addendum (Revised 8/15/2024)

Student protections statement: UAF embraces and grows a culture of respect, diversity, inclusion, and caring. Students at this university are protected against sexual harassment and discrimination (Title IX). Faculty members are designated as responsible employees which means they are required to report sexual misconduct. Graduate teaching assistants do not share the same reporting obligations. For more information on your rights as a student and the resources available to you to resolve problems, please go to the following site:

- Office of Rights, Compliance and Accountability (907-474-7300, uaf-orca@alaska.edu, 3rd Floor, Constitution Hall)

- Associated Students of the University of Alaska Fairbanks (ASUAF) or ASUAF Student Government (907-474-7355, asuaf.office@alaska.edu, Wood Center 119)

Nondiscrimination statement: The University of Alaska is an affirmative action/equal opportunity employer, educational institution and provider. The University of Alaska does not discriminate on the basis of race, religion, color, national origin, citizenship, age, sex, physical or mental disability, status as a protected veteran, marital status, changes in marital status, pregnancy, childbirth or related medical conditions, parenthood, sexual orientation, gender identity, political affiliation or belief, genetic information, or other legally protected status. The University's commitment to nondiscrimination, including against sex discrimination, applies to students, employees, and applicants for admission and employment. Contact information, applicable laws, and complaint procedures are included on UA's statement of nondiscrimination available atwww.alaska.edu/nondiscrimination.

For more information, contact:

UAF Office of Rights, Compliance and Accountability
1692 Tok Lane
3rd floor, Constitution Hall, Fairbanks, AK 99775
907-474-7300
uaf-orca@alaska.edu

Additional syllabus statement for courses that include off-campus programs and research activities:

University Sponsored Off-Campus Programs and Research Activities
We want you to know that:

1. UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual: www.alaska.edu/nondiscrimination.

2. Incidents can be reported to your university's Equity and Compliance office (listed below) or online reporting portal. University of Alaska takes immediate, effective, and appropriate action to respond to reported acts of discrimination and harassment.

3. There are supportive measures available to individuals that may have experienced discrimination.

4. University of Alaska's Board of Regents' Policy & University Regulations (UA BoR P&R) 01.02.020 Nondiscrimination and 01.04 Sex and Gender-Based Discrimination Under Title IX, go to: http://alaska.edu/bor/policy-regulations/.

5. UA BoR P&R apply at all university owned or operated sites, university sanctioned events, clinical sites and during all academic or research related travel that are university sponsored.

For further information on your rights and resources visit the student placement guidelines page of the equity and compliance site.