

Course Syllabus for PHYS F472J (1 credit)

Advanced Topics: Physical Cosmology

Instructor: Martin Truffer, mtruffer2@alaska.edu

Prerequisites: PHYS F220; PHYS F301; or permission of instructor.

Meeting times: **Class:** 1:00 – 2:00 PM, Monday, Wednesday, Friday

Last regular meeting time: 1 November

Website: I will use Canvas to distribute homework, solutions and other material

Materials Needed: The students will be provided with a manuscript

Content:

This short course will provide an overview of some concepts in Physical Cosmology. It is aimed at advanced undergraduate or beginning graduate students in physics. The course covers some concepts in General Relativity and what they tell us about the evolution of the universe. We will discuss how distance and age relationships are determined. The concept and evidence for the Big Bang and an inflationary early phase of the universe will be discussed.

Course Goals and Learning Outcomes:

The course goal is to familiarize students with some of the basic concepts of physical cosmology, including mathematical models for the universe, the concept of the Big Bang, inflation, and the expansion of the universe.

Lectures:

Lectures will mostly be delivered on the blackboard.

Homework:

There will be one homework assignment per week. The assignment will be posted on Wednesdays and will be due on the following Wednesday. You should turn in an electronic copy of the homework (make sure your scan is clearly readable). You are encouraged to work with others on the homework, but make sure the work you turn in is not simply copied from someone else. These assignments help me assess your understanding of the material, and will count toward your final grade. **Late problem sets will generally not be accepted**, except under special circumstances. Solutions will be

distributed in class. You are **strongly** encouraged to look at these solutions to help you understand how to approach these problems; it will also help for the final.

Final Exam:

The final exam will be a take-home exam that is due at **5:00 PM, Wednesday, November 3th.**

Grading

The course grade will consist of the following components:

Final exam	50 %
Homework	50 %

Your final grade will depend on your overall percentage score (> 97%: A+, 93-96% : A, 90-92%: A-, 87-89%: B+, etc.). I will use attendance and course participation to round your grade up.

Contacting Me:

I have office hours at the Reichard Bulding, Rm 116, Tuesdays and Thursdays 10:15-11:15 AM. At other times I'm in my office at the Geophysical Institute: Rm 401D. The best way to contact me is email (mtruffer2@alaska.edu), which I check very regularly. You can contact me anytime. If you would like an office appointment, I encourage to email first to make sure I'm actually in my office. I will also meet you in the Natural Science building outside office hours by appointment. Additionally, I can meet with you on Zoom.

Student Code of Conduct: You are expected to submit work that is your own and properly acknowledge the work of others. You are responsible for understanding and adhering to the [Student Code of Conduct](#) that is printed in the UAF Course Catalog. **Abide By It.** Violations of the Code will be reported to the Dean of Students.

Special Needs: The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. We will work with the Office of Disabilities Services (Room 203 WHIT, Phone 474-7043) to provide reasonable accommodation to students with disabilities.

Plagiarism: Plagiarism and cheating are matters of serious concern for students and academic institutions. This is true in this class as well. The UAF Honor Code (or [Student Code of Conduct](#)) defines academic standards expected at the University of Alaska Fairbanks which will be followed in this class. (Taken from the [UAF plagiarism web site](#), which has many links with good information about this topic)

Complaints and Concerns: You are always welcome to talk to me about anything, however, if you have a non-subject matter question or concern that cannot be resolved by me, contact the Center for Student Rights and Responsibilities (<https://uaf.edu/csrr/index.php>).

Student Protections and Services: Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student services, etc to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go the following site: www.uaf.edu/handbook/.

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

Incomplete Grade: Your instructor follows the University of Alaska Fairbanks Incomplete Grade Policy: “The letter “I” (Incomplete) is a temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of work in a course but for personal reasons beyond the student’s control, such as sickness, has not been able to complete the course during the regular semester. Negligence or indifference are not acceptable reasons for an “I” grade.”

Technology requirements: To access instructor’s lecture notes on Canvas, students will need to have access to the internet and software to view pdf files.

Effective communication: Students who have difficulties with oral presentations and/or writing are strongly encouraged to get help from the UAF Department of Communication’s Speaking Center (907-474-5470, speak@uaf.edu) and the UAF English’s Department’s Writing Center (907-474-5314, Gruening 8th floor), and/or CTC’s Learning Center (604 Barnette Street, 907-455- 2860).