

# 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 class: Monday, 1 May

**Website:**                   I will use Google Classroom to distribute homework, solutions and other material

**Materials Needed:** *Cosmological Physics*, John A. Peacock (1999), Cambridge Univ

**Other sources:** *Gravity*, James B. Hartle (2003), Pearson

### 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, the expansion of the universe, and, time permitting, galaxy formation.

### Lectures:

Lectures will mostly be delivered on the blackboard. The text book often contains large gaps, and the lectures are intended to help fill those.

### Homework:

There will be one homework assignment per week. The assignment will be handed out (and posted on Google Classroom) on Wednesdays and will be due in on the following Wednesday by beginning of class (1 pm). You are encouraged to work with others on the homework, but make sure the paper 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.** 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 at **1:00 PM – 3:00 PM, Wednesday, May 3th.**

### Grading:

The course grade will consist of the following components:

Final exam	40 %
Homework	60 %

Your final grade will depend on your overall percentage score (A: 90-100%, B: 80-90%, C: 70-80%, D: 60-70%, F: 0-60%). I will use attendance and course participation to round your grade up or down.

### Contacting Me:

I have office hours 2:00 - 4:30 Monday (Rm 108 REIC). At other times I'm in my office at the Geophysical Institute: Rm 401D; phone number: 474 5359. The best way to contact me is email, which I check very regularly. You can contact me anytime. I encourage to call or email first to make sure I'm in my office. I will also meet you in the Natural Science building outside office hours by appointment.

### 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 department chair, Dr. Wackerbauer.

### 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.

### Students with Disabilities:

If applicable, it is your responsibility to arrange for these services. The UAF Center for Health and Counseling provides services for UAF students with disabilities to ensure equal access to educational opportunities. The Center's Disability Services Program ensures compliance with §504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. If you believe you are eligible for 504 and/or ADA accommodations, please contact them at 474-7043 (WHIT 203).