

PHYS 3368 / 5368 – Cosmology

Spring 2019

Instructor: Professor Joel Meyers (jrmeyers@smu.edu)

Lectures: TuTh 9:30-10:50 AM, Fondren Science Building 155

Textbook: *Modern Cosmology*, by Scott Dodelson (ISBN 9780122191411)

Grading:

- Homework - 30%
- Quizzes - 30%
- Midterm exam (In class Thursday March 21) - 20%
- Final paper (undergraduate students) / Final exam (graduate students) - 20%

Office Hours: TuTh 11:00 AM – 12:00 PM, Fondren Science Building 209

Topics to be covered:

- Introduction to General Relativity
- The homogeneous Universe
- Dynamics of expansion
- Thermal history of the Universe
- Cosmological nucleosynthesis
- The cosmic microwave background
- Dark matter
- Dark energy
- Cosmic inflation
- Sketch of cosmological perturbation theory

Homework: Students are allowed and encouraged to work in groups on homework, but each student must submit unique and individual answers to be graded. Undergraduate students will typically have fewer and less-demanding problems to complete than graduate students.

Quizzes: Short quizzes (5-10 minutes) will be given to start most classes. Some will test basic concepts from previous lectures and readings. Others will be ungraded (i.e. full credit will be given for any attempt) and will be used to assess background knowledge before beginning a new topic. The lowest 3 quiz scores will be dropped (including quizzes missed for absences without prior arrangements).

Midterm Exam: There will be a midterm exam in class on Thursday March 21. You will be allowed access to hand-written notes and a scientific calculator. Graduate students will have more challenging problems than undergraduate students for the midterm exam.

Final Paper (Undergraduates): There will be no final exam for undergraduate students. Instead, undergraduates will be asked to complete a research paper on a topic of their choosing related to modern cosmology. The paper should be 8-12 pages with double-spaced 12pt font. A topic must be chosen and approved by the instructor no later than Thursday April 4, a rough draft submitted by Thursday April 18, and the final paper by Thursday May 2.

Final Exam (Graduates) - Thursday May 9 8:00-11:00 AM: There will be a cumulative final exam for graduate students. As with the midterm exam, you will be allowed access to hand-written notes and a scientific calculator.

Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit <http://www.smu.edu/Provost/ALEC/DASS> to begin the process. Once registered, students should then schedule an appointment with the professor as early in the semester as possible, present a DASS Accommodation Letter, and make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence.

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity will be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work.

Non-Attendance: A student who is absent from class without valid reason for two consecutive weeks will be administratively dropped from the class by the instructor.