

Astronomy and Cosmology
01:750:109:02
Fall 2020

Instructor: Professor Andres Jerez

Summary: A predominantly descriptive introduction to current ideas concerning the nature and origin of the earth, the solar system, the galaxy, and the universe; neutron stars and black holes; the "big-bang"; the possibility of life outside the Earth. Development of our understanding of the solar system from the time of the Greeks to the present day.

This course is independent of 01:750:110 (which has an emphasis on stars and galaxies) and the two may be taken in either order, or concurrently. The two sections of 109 in the fall semester are run independently.

Pre-requisites: None.

For non-science majors, may not be taken for major credit.

Meeting times: Two 80 minute lectures per week.

Lecture: T-Th 7 (6:40 – 8:00 pm)

Recitations: None

Text: There is no particular textbook required for this course. Here are two recommendations:

- The Cosmic Perspective: Fundamentals, by Bennett, Donahue, Schneider, and Voit; currently in its third edition and published by Pearson (any edition will do, but our knowledge about the sky increases at a very fast pace). I have been using this book to prepare my courses over many years. I find that it is well written, concise, and makes an effort in connecting different ideas and themes across the chapters. The reading list in the class calendar below refers to this book.
- Astronomy from Openstax Access. It is *free*, online, and full of additional material such as links to websites and videos. It will probably work very well as a reference. You may have to use the table of contents and the index often, just as you would do as part of a research project.

LMS: Canvas

Provisional Plans for Remote Instruction:

Synchronous instruction. There will be meetings at the lecture times indicated above with the help of the BigBlueButton app, integrated in Canvas. Meetings in Canvas appear under the label "Conferences". You can learn about BigBlueButton from the "Course Prep/Communication" module in the Canvas Course page. Meetings will consist of regular lecture and demos, combined with synchronous group activities using breakout rooms, and assessment polling, all within BigBlueButton. You will be able to communicate during the lecture and the group activities using Chat

Asynchronous instruction. Materials will be posted in Canvas. They will include: Lecture introductory videos, recording of the lectures, lecture notes, links to the recordings of the demos, online videos, and simulations. Homework will be assigned weekly, submitted and graded in Canvas. Homework assignment will be due before the beginning of the Tuesday lectures. The assignments will be announced in class and in Canvas. There will be activities on Canvas that may require research, analysis, and discussions with other students in the course. You will be notified of these assignments as they are posted.

There will be two exams: a midterm exam on Thursday, October 15 during lecture time and a final exam to be scheduled sometime during the Final Exam period, December 15-22. Both exams will be closed-book format, and will consist of 30 multiple-choice questions based on the topics covered in the course. The final exam will not be cumulative. You will take the exams on Canvas using the proctoring app ProctorTrack.

Hardware requirements: Internet access to Canvas. It may be possible to access the audio part of the lecture meetings by phone. Taking exams will require having access to a computer, microphone, webcam, plus internet connection.

Technology requirements: Please give required, and optional but desired.

Provisional Grading Plans:

Homework: 25%

Online Activities and Class participation: 25%

Mid-term: 25%

Final Exam: 25%

Schedule (provisional):

Week: Topic

- | | |
|----|---|
| 1 | Our place in space and time |
| 2 | Understanding the sky |
| 3 | Understanding the sky |
| 4 | Beginnings of modern astronomy |
| 5 | Two new sciences |
| 6 | Solar system |
| 7 | Formation of the Solar system |
| 8 | Terrestrial planets |
| 9 | Terrestrial planets |
| 10 | Jovian planets |
| 11 | Jovian planets, asteroids, comets, meteorites |
| 12 | Asteroids, comets, meteorites |
| 13 | Planets around other stars |

Academic Integrity:

Students are expected to maintain the highest level of academic integrity. You should be familiar with the university policy on academic integrity: <http://academicintegrity.rutgers.edu/academic-integrity-policy/> Violations will be reported and enforced according to this policy.

Use of external sources to obtain solutions to homework assignments or exams is cheating and is a violation of the University Academic Integrity policy. Cheating in the course may result in penalties ranging from a zero on an assignment to an F for the course to expulsion from the University. Posting of homework assignments, exams, recorded lectures, or other lecture materials to external sites without the permission of the instructor is a violation of copyright and constitutes a facilitation of dishonesty, which may result in the same penalties as explicit cheating.

Not only does the use of such sites violate the University's policy on Academic Integrity, using such sites interferes with your achievement of the learning you are paying tuition for. Assignments, quizzes, and exams are given not simply to assign grades, but to promote the active learning that occurs through completing assignments on your own. Getting the right answer is much less important than learning how to get the right answer. This learning is critical to your success in subsequent courses and your careers.

Student wellness Services

Student Counseling, ADAP & Psychiatric Services (CAPS) wellness for non-emergency psychological health issues services (848) 932-7884, 17 Senior Street, New Brunswick, NJ 08901
<http://health.rutgers.edu/medical-counseling-services/counseling/>

Violence Prevention & Victim Assistance (VPVA), (848) 932-1181, 3 Bartlett Street, New Brunswick, NJ 08901, <http://www.vpva.rutgers.edu/>

Office of Disability Services (848) 445-6800, Lucy Stone Hall, Suite A145, Livingston, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854, <https://ods.rutgers.edu/>

Scarlet Listeners for confidential peer counseling and referral hotline, (732) 247-5555,
<http://www.scarletlisteners.com>