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AST 101 (Spring 2024) Introduction to Astronomy (3 credits)

Time & Location: TuTh (8:30-9:50AM) & ENGINEERING 143

Instructor: Prof. Jin Koda

Office: Room 455, Earth and Space Sciences Building

Email: jin.koda@stonybrook.edu

Office Hours: Tue 1:00-2:30PM & Thu 2:30-4:00PM (or by appointment – email me)

Teaching Assistant:

Email:

Office Hours:

Course Description:

This course provides an introduction to **astrophysics (astronomy & physics)**. We will learn about various astronomical objects such as stars, galaxies, as well as taking a look at our current understanding of the Universe as a whole. This course does not cover planetary astronomy, which is a topic of AST 105.

Notes for students in astronomy major: This course provides a broad view of astronomy (“big picture”) and will be helpful for astronomy major students. However, the credits do not count for the astronomy major.

Learning Objectives:

1. Students will demonstrate a mastery of physics concepts of velocity, acceleration, force, energy, momentum, and angular momentum.
2. Students will be able to think critically and apply appropriate physics concepts in analyzing qualitative problems in astronomical objects.
3. Students will demonstrate awareness of observational tools used to study astronomical objects.
4. Students will demonstrate an understanding of the cosmos, including stars, galaxies, and the Universe.

Required texts & Materials:

1. **Astronomy 2e** –OpenStax textbook (online and PDF versions *for free*; print version for purchase): see <https://openstax.org/details/books/astronomy-2e>
2. **PointSolutions polling clicker** – you can use your cellphone or computer with app, but have to purchase a license: see instructions <https://it.stonybrook.edu/services/clickers>

Course Grades:

The grading will be based on quizzes (10%), two midterm examinations (30% each), and final examination (30%). ***No additional point will be offered under any circumstance.***

Exams:

- **Midterm exams** will be held in the regular classroom at the regular class time. **Final exam date and time** are determined by the University’s registrars. In accordance with University policies, it

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is the students' responsibility to schedule classes so as to avoid final examination conflicts. Check the final examination schedule at the beginning of the semester.

- The exams will cover materials presented in classes and contained within reading assignments (textbook).
- **Missed exams:** Students should not expect that they will be allowed to make up missed exams. An excuse for make-up exam will be judged on a case-by-case basis (primarily on a basis of valid medical absence, jury duty, or military service). *Students must inform the instructor for missing exam before the exam, and in any circumstance, within 48 hours of the missed exam. They must be prepared to provide documentation supporting their excuse.*
- **Challenges to grades:** Challenges of any exam grade must be made within 5 business days of the posting of the grade. No changes will be made to grade after that time regardless of cause.

Quizzes:

- **Quizzes** will be administered at random times in class via clickers. It is the students' responsibility to bring their clickers to each class. *A forgotten or nonfunctional clicker will not be an acceptable excuse for missing quiz.* Quizzes in the first two weeks are a practice and do not count for final score.
- The number of quiz questions varies every class and week (it could be zero in some classes). Quiz scores will be normalized so that every week carries the same amount for final score.
- *No makeup quiz will be given under any circumstance.* However, *the lowest three-week quiz scores will be dropped* to accommodate *all* unforeseen circumstances that students do not have a control of.
- **Challenges to grades:** Challenges of any quiz grade must be made within 5 business days of the posting of the grade. No changes will be made to grade after that time regardless of cause.

Brightspace:

All students must regularly monitor Brightspace for notices and changes to course information including the syllabus. Quiz and exam scores will also be posted on Brightspace.

Important University Policies:

Americans with Disabilities Act: If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Academic Integrity: Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Electronic Communication: Email to your University email account is an important way of communicating with you for this course. For most students the email address is 'firstname.lastname@stonybrook.edu'. It is your responsibility to read your email received at this account. For instructions about how to verify your University email address see this:

<http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo>

If you choose to forward your University email to another account, we are not responsible for undeliverable messages.

SPECIAL NOTE REGARDING PLAGIARISM AND DISHONESTY: All instances of plagiarized work or academic dishonesty will be brought before the Academic Judiciary Committee. All parties involved (both the copier and the person who produced the original work) will be held accountable for any instance of plagiarism or dishonesty.

Exam and class dates are set. Lecture subjects may be adjusted.

AST101 (Spring 2024): Lecture and Exam Schedule & Reading Assignments			
Lecture	Date	Chapter	Subject
1	Jan 23	1	Science and the Universe
2	25	2&3.1	Observing the Sky: The Birth of Astronomy
	30	3	Motion, Energy, and Gravity
3	Feb 1	3	Motion, Energy, and Gravity
4	6	5	Radiation and Spectra (Light & Matter)
5	8	5	Radiation and Spectra (Light & Matter)
6	13	6	Astronomical Instruments (Telescopes)
7	15		Special Relativity
8	20	24.1-4	General Relativity
9	22		Midterm 1
	27	15,16	The Sun
10	29	15,16	The Sun
11	Mar 5	17,18,19	Surveying the Stars (video lecture)
12	7	17,18,19	Surveying the Stars (video lecture)
13	12		<i>Spring Break</i>
14	14		<i>Spring Break</i>
15	19		Building blocks of the Universe/Journey to the Star
16	21	21	The Birth of Stars
17	26	21,22	Stellar Evolution
18	28	21,22	Stellar Evolution
	Apr 2	23,24	The Death of Stars
19	4		Midterm 2
20	9	20,25	The Milky Way Galaxy (Our Galaxy)
21	11	26	Galaxies
22	16	26,27	Galaxies/Galaxy Evolution
	18	27,28	Galaxy Evolution
23	23	29	Dark Matter, Dark Energy, and the Fate of the Universe
24	25	29	Dark Matter, Dark Energy, and the Fate of the Universe
25	30	29	The Birth of the Universe
26	May 2	29 (&30)	The Birth of the Universe (& Life in the Universe)
	14		Final Exam (9:00-10:45)

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