

## AST 101 (Spring 2022): Introduction to Astronomy (3 credits)

**Time & Location: TuTh (8:00-9:20AM); ENGINEERING 143**

**Instructor: Prof. Jin Koda**

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Office Hours: To be announced

**TA: To be announced**

**Course Description:**

This course provides an introduction to **astrophysics (astronomy & physics)**. We will learn about various astronomical objects such as stars, galaxies, black holes as well as taking a look at our current understanding of the Universe as a whole.

Notes: This course does not cover planetary astronomy (which is a topic of AST105). This course provides a broad view of astronomy (“big pictures”) and be helpful even for astronomy major students. However, it is not a requirement for the astronomy major and the credits do not count for the major.

**Learning Objectives:**

1. Students will demonstrate 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, including stars, galaxies, and the Universe.
3. Students will demonstrate awareness of observational tools used to study astronomical sources.
4. Students will demonstrate an understanding of a broad picture of the cosmos, including stars, galaxies, and the Universe.

**Required texts & Materials:**

1. Cosmic Perspective: Stars, Galaxies and Cosmology, 8<sup>th</sup> Edition by Bennett, Donahue, Schneider, and Voit. Copyright 2017. ISBN13: 978-0134073828 (5<sup>th</sup>, 6<sup>th</sup> & 7<sup>th</sup> editions are fine, too).

**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 & Quizzes:**

- **Midterm exams** will be held in the regular classroom at the regular class time unless otherwise announced. Depending on the development of the COVID-19 pandemic, we may be forced to switch to online exams. In such a case, a separate announcement will be posted on Blackboard.
- **Final exam date and time** are determined by the University’s registrars. In accordance with University policies, it 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! Again, there is a possibility that we may be forced to switch to online exam depending on the COVID-19 pandemic development.
- The exams will cover material presented in class and contained within reading assignments (textbook).
- **Missed exams:** Students should not expect that they will be allowed to make up a missed exam. Reasons for wanting to make-up an 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 contact the instructor before the scheduled exam for missing exam and be prepared to provide documentation supporting their excuse.*
- **Quizzes** will be posted on Blackboard *immediately after class and be open for 24 hours*. Students must complete the quizzes within the time window. *No excuse will be considered for missing quiz.* The first

## Version 1

- two weeks are a practice period, and the quizzes in the period do not count for final score.
- The number of quiz questions will vary every class and every week (it could be zero in some classes). The quiz scores will be normalized so that every week carries the same amount for final score.
- **No makeup quiz will be given under any circumstances.** 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 grade for an exam or quiz must be made within 5 business days of the posting of the grade. No changes will be made to a grade after that time regardless of cause.

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

### Additional Course Policies:

- **Student Responsibilities:** You will be expected to abide by all University regulations, procedures, requirements, and deadlines as described in the *Undergraduate Student Bulletin*.
- **Attendance:** As per the University policy outlined in the *Undergraduate Student Bulletin*, students are expected to regularly attend all classes and to participate in the classroom experience.
- **Classroom Behavior and Conduct:** You are expected to conduct yourself in accordance with the minimal undergraduate student responsibilities described in the Undergraduate Student Bulletin including:
  - o You are expected to arrive for class promptly.
  - o Avoid behavior that is disruptive to the classroom especially the use of cell phones.
  - o Avoid conversations during class
  - o Be familiar with material presented in previous lectures.

### 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](mailto: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](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.

**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.

AST101 (Spring 2022): Lecture and Exam Schedule & Reading Assignments			
Lecture	Date	Chapter	Subject
1	Jan 25	1	A Modern View of the Universe
2	27	3.3	The Science of Astronomy
	Feb 1	4	Motion, Energy, and Gravity
3	3	4	Motion, Energy, and Gravity
4	8	5	Light & Matter
5	10	5	Light & Matter
6	15	6	Telescopes
7	17	S2	Space & Time
8	22	S3	Spacetime & Gravity
9	24		<b>Midterm 1</b>
	Mar 1	14	Our star: the Sun
10	3	14	Our star: the Sun
11	8	S4	Building blocks of the Universe/Journey to the Star
12	10	15	Surveying the Stars
13	15		<i>Spring Break</i>
14	17		<i>Spring Break</i>
15	22	15	Surveying the Stars
16	24	17	Star Stuff
17	29	17	Star Stuff
18	31	16	Star Birth
	Apr 5	18	The Stellar Graveyard
19	7		<b>Midterm 2</b>
20	12	19	Our Galaxy
21	14	20	Galaxies
22	19	20,21	Galaxies/Galaxy Evolution
	21	21	Galaxy Evolution
23	26	23	Dark Matter, Dark Energy, and the Fate of the Universe
24	28	23,22	Dark Matter, Dark Energy, and the Fate of the Universe/ The Birth of the Universe
25	May 3	22	The Birth of the Universe
26	5	24	Life in the Universe
	17		<b>Final Exam (9:00-10:20)</b>