Introduction to Astronomy

Course Number:	AST 101	**Term:**	Summer, 2021
Instructor:	TBA	**Email:**	
Contact Hours:	48	**Meeting Times:**	TBA
Credits:	3.0		

Course Description:

This is a survey course on astronomy. Astronomy is a discipline based upon observation of the sky. It is an exciting exploration that supports the notion that "the universe is not only stranger than we know; it is stranger than we can know." The students will learn about different kinds of objects that make up the universe (e.g. planets, stars, star clusters, and galaxies). We will study the formation, stages of evolution, and end states of the stars. We will discuss what powers the Sun and discuss the evidence that stellar evolution takes place on time scales of millions or billions of years. We will highlight that astronomy is an evidence-based science. The ultimate purpose of the course is to know our place in the universe and to widen our horizons as far as possible.

Further, we'll investigate the universe of these objects as a dynamic, evolving place. We'll consider the evolution of stars and their planets, galaxies, and the universe itself. More usefully, perhaps, we'll learn how scientists approach and solve problems, because many of these techniques usefully translate into problem-solving techniques useful in virtually any aspect of life.

Learning Objectives:

Upon successful completion of this course, students will be prepared to:

1. Describe the history of astronomy
2. Explain observations of the solar system as made from Earth
3. Describe the force of gravity and its role in astronomy
4. Describe theories on the formation of stars and planets
5. Explain properties of various astronomical objects
6. Describe evidence supporting major cosmological theories

Required Textbook and Course Materials:

Textbook: Astronomy

Authors: Andrew Fraknoi; David Morrison; Sidney C. Wolff

Edition: 2016 or later

ISBN-13: 978-1938168284

Language of Instruction:

This course is taught entirely in English, including lectures, homework, assignments and examinations. Teaching assistants will be fluent in both English and Mandarin.

Course Prerequisites:

None

University Policies

Class Format

In Person. Course activities, discussions, assignments and resources will be made available at the start ofand during the course.

Attendance, Participation and Deliverables

Courses are very intensive and in order to be successful, students need to attend every class. Attendance is required for all lectures and class activities. Class participation is expected from every student and form a significant portion of the final course grade

All course deliverables (homework assignments and tests) are due on time as assigned. This course includes *no* make-ups, postponements or additional assignments, except for verified medical emergencies. If you miss an exam/assignment due to a non-sanctioned absence, your score on that exam/assignment will be zero.

Academic Dishonesty

All cases of academic dishonesty will be diligently pursued. Academic dishonesty includes representing the work of another as one's own work or cheating by any means. Academic dishonesty also includes aiding, abetting, concealing or attempting such activity. The penalty is automatic failure of the course and possible suspension from the university.

Grading Scale

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97 – 100	A+	77 – 79	C+
93 – 96	A	73 – 76	C
90 – 92	A-	70 – 72	C-
87 – 89	B+	67 – 69	D+
83 – 86	B	63 – 66	D
80 – 82	B-	60 – 62	D-
		0 - 59	F

Professor- and Course-Specific Policies (*Tentative*)

Reading

Reading the sections of the textbook corresponding to the class lectures and assigned homework exercises is considered part of the homework assignment. You are expected to read the assigned material in advance of the lecture.

Homework

You are encouraged to discuss general problem-solving methods with other students, but the solutions you hand in must be uniquely your own. Do not copy your colleague's work because you will not learn the material if you do.

Grade Components:

Attendance	10%
Homework	20%
Quizzes	20%
Exams	50%
Total	**100%**

Course Schedule (*Tentative*)

Module	Topics
1	Science and the Universe: A Brief Tour Observing the Sky: The Birth of Astronomy Orbits and Gravity Earth, Moon, and Sky Radiation and Spectra Astronomical Instruments
2	Other Worlds: An Introduction to the Solar System Earth as a Planet Cratered Worlds Earthlike Planets: Venus and Mars The Giant Planets Rings, Moons, and Pluto
3	Comets and Asteroids: Debris of the Solar System Cosmic Samples and the Origin of the Solar System The Sun: A Garden-Variety Star The Sun: A Nuclear Powerhouse Analyzing Starlight The Stars: A Celestial Census
4	Celestial Distances Between the Stars: Gas and Dust in Space The Birth of Stars and the Discovery of Planets outside the Solar System Stars from Adolescence to Old Age The Death of Stars Black Holes and Curved Spacetime
5	The Milky Way Galaxy Galaxies Active Galaxies, Quasars, and Supermassive Black Holes

	The Evolution and Distribution of Galaxies The Big Bang Life in the Universe Final Exam