

Syllabus

Course Information

- Semester and Year: Fall 2026
- Course Title: Introduction to Stars, Galaxies, and Cosmology
- Course Prefix and Number: AST 112
- Section Number: 18200 (lecture) + 18424 (lab)
- Credit Hours: 4
- Start Date: 9/8/26
- End Date: 12/18/26
- Class Format: Online

Instructor Information

- Instructor: Carver Bierson
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- Phone: 480-423-6018
- Office Location: NS 128
- Office Hours: Mon/Wed: 1:00-3:30 in NS 400

Course Description

Introduction to astronomy for the non-science major. Structure and evolution of stars; supernovae, black holes, and quasars; nebulae; star clusters; galaxies; cosmology, including the birth and death of the universe.

Prerequisites and/or Corequisites

Prerequisites: A grade of C or better in MAT090, or higher level mathematics course, or eligibility for MAT120 or higher as indicated by appropriate placement.

Course Competencies

1. Apply the scientific method and other critical thinking approaches to identify scientific questions and propose and evaluate scientific hypotheses.
2. Apply quantitative reasoning and mathematical calculation to a variety of astronomical phenomena.
3. Discuss the interplay between the field of astronomy and society in both modern and historical contexts.
4. Describe the tools and techniques used to study stars, galaxies, and the universe, including an understanding of the electromagnetic spectrum and orbits.

5. Analyze a variety of astronomical data using appropriate tools and physical theories.
6. Plan and conduct observations of astronomical objects (naked eye, telescope, robotic telescope, and/or simulated observations).
7. Describe the fundamental characteristics of stars, including their energy source, luminosity, interior structure, and stellar activity, in the context of stellar formation and evolution.
8. Determine the distances to stars and galaxies using a variety of techniques.
9. Use observational data, including the Hertzsprung-Russell diagram, to describe the formation and evolution of stars and stellar populations.
10. Compare the types and characteristics of different galaxies, including stellar populations, characteristics of the interstellar medium, morphology, and dynamics.
11. Describe the observational support for and consequences of the current consensus model of the formation, composition, and evolution of the universe.

General Education & Institutional Learning Outcomes

General Education provides foundational learning experiences that contribute to academic and career success. It is reflected in [Scottsdale Community College's Institutional Learning Outcomes](#): Arts & Humanities Awareness, Career Readiness, Critical Thinking and Problem Solving, Effective Communication, Information Literacy, and Social Responsibility.

Students who take AST 112 will learn to critically analyze a broad range of information about the world around them. This includes finding information relevant to a task, interpreting graphical information and performing appropriate data analysis.

Program Learning Outcomes

Credit-bearing courses at Scottsdale Community College can count toward the completion of a degree or certificate program. Each program has Program Learning Outcomes, which are learned assets that students can claim to have acquired by completing their academic or occupational program at SCC. Program Learning Outcomes can be found on the [Degrees and Certificates page](#) of the SCC Website. For each degree, look under "What You'll Learn."

This course is a General Education course that is foundational to many degree programs and a key component of the Arizona General Education Curriculum (AGEC) certificate program. This course fulfills an Natural Sciences [NSI] requirement for the AGEC.

Texts and Course Materials

For this class we will be using the free OpenStax Astronomy textbook. You can access the entire textbook online for free and can download a full pdf for free. If you wish you may order a physical copy from OpenStax but that is not required.

Astronomy

Author: Andrew Fraknoi, David Morrison, Sidney Wolff

Publisher: Openstax

Edition: 2nd

Website: <https://openstax.org/details/books/astronomy-2e>

Price: Free

Course Policies

The following are policies specific to this course. Students are also responsible for the college policies included on the [Student Regulations](#) page of the Maricopa Community College District website.

Late work Policy

Late work is not accepted.

I also understand that unexpected events occur. Because of this everyone in the class gets 2 late tickets.

If you message me before an assignment is due to use a late ticket, I will extend the deadline for that dates assignments by 3 days. Generally, this includes the weeks discussion and lab. This cannot be used for assignments that rely on group participation or past the last day of the term.

Plagiarism

Plagiarism is a form of cheating in which a student falsely represents another person's work as their own – it includes, but is not limited to: (a) the use of paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; (b) unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials; and (c) information gathered from the internet and not properly identified. Inappropriate use of AI tools, as fully outlined later in this syllabus, will be treated as plagiarism.

Academic Consequences

Any student found by a faculty member to have committed academic misconduct may be subject to the following academic consequences, based on the faculty member's judgment of the student's academic performance:

1. Warning - A notice in writing to the student that the student has violated the academic standards as defined above.
2. Grade Adjustment - Lowering of a grade on a test, assignment, or course.

3. Discretionary assignments - Additional academic assignments determined by the faculty member.
4. Course Failure - Failure of a student from a course where academic misconduct occurs.

How to avoid plagiarism:

1. Always put content into your own words (don't copy and paste). If you do want to use the exact wording from a source it must be in quotation marks.
2. Cite your sources. Always clearly say where you got your information.

Attendance Policy

It is policy that students who do not attend the first class period are dropped from the course. In a fully online course that is asynchronous (like this one), I will use the first day that assignments are due to assess first data attendance: you must turn in the "Syllabus Quiz" due on **Thursday Jan 27**, to demonstrate attendance on the first day. You may be dropped from the course if you do not complete and submit this assignment on time.

In accordance with college and district policies, students are expected to attend and be actively engaged in their classes whether instruction is provided face-to-face, online, or in a hybrid modality involving both synchronous and asynchronous components. In this course, students are allowed a maximum of **2 weeks unexcused absences**; after the 2nd week of unexcused absence, a student **may be withdrawn from the course** by the instructor. MCCCDC Administrative Regulation 2.3.2 provides additional details on what is considered an official absence, and procedures for handling make-up work for approved exceptions

Instructional Contact Hours and Minimum Course Expectations

Instructional contact hours are the weekly time students spend directly learning with their instructor or course activities. These activities include, but are not limited to, lectures, discussions, labs, group work, and viewing recordings. Instructional contact hours vary by course; refer to the [MCCCDC course bank](#) for your course's details.

Minimum course expectations include the number of hours students are expected to spend outside of class (weekly) completing coursework. Students are encouraged to use the [Time Management Calculator](#) to help estimate their weekly time commitment for classes.

This is a 4 credit course with a lab. It is expected that this class will take you **12 hours a week to complete**. Expect this class to take around 3 more hours every week than other 3 credit classes you are taking.

Course Technologies

View the [Accessibility Statements & Privacy Policies](#) of the technologies used in this course. The [SCC Help Desk](#) provides students with a primary point of contact within SCC for college-supported technology services and technical assistance.

Maricopa Systems

This course uses key Maricopa systems for course management and communication.

- Canvas Learning Management System
- Student Maricopa Gmail Account

Student Assignment Tools

This course requires students to participate in or submit assignments using desktop or cloud-based applications.

- Google Products
- ScreenPal
- Slooh Online Telescope

Exam Proctoring Tools

Plagiarism Checker Tool (Turnitin)

Turnitin is a plagiarism check tool that matches text to a vast database of sources, including the internet, published works, commercial databases, and student work submitted to Turnitin in institutions internationally. Students must submit designated papers to Turnitin when instructed. Information and instructions for Turnitin are provided in the course. For your reference, read the [Turnitin Terms of Service](#).

Generative Artificial Intelligence (AI) Policy

The World Economic Forum defines generative AI as “a category of artificial intelligence (AI) algorithms that generate new outputs based on the data they have been trained on. Unlike traditional AI systems that are designed to recognize patterns and make predictions, generative AI creates new content in the form of images, text, audio, and more.”

Some examples of generative AI tools include but are not limited to: ChatGPT, Google Gemini, Microsoft Copilot, Stable Diffusion, GrammarlyGo, and Adobe Firefly.

No Generative Artificial Intelligence (AI) Allowed

In this class, all work submitted must be your own. The use of generative AI tools will be considered academic misconduct (see Administrative Regulation 2.3.11 1.B(b)) and will be treated as such. If you are unsure if the tool or website you are using is a generative AI tool, please contact the instructor for further clarification before using the tool or website.

Grading Standards and Practices

Grade Scale

Grade Scale

Table 1 Course Grading Scale

Letter Grade	Points Range
A	90 – 100%
B	80 – 89%
C	70 – 79%
D	60 – 69%
F	0 – 59%

Assignments

Table 2 List of Assignments

Assignment Types	Percent of Grade	Notes
Weekly Readings	15%	Drop lowest 2 grades
Canvas Labs	20%	Drop lowest 1 grade
Slooh Labs	20%	Drop lowest 1 grade
Discussions	30%	Drop lowest 1 grades
Class Project	15%	Includes proposal and reflection
Class pre+post test	2%	
TOTAL:	102%	

Student/Instructor Interaction

In this course, you can expect regular and substantive interaction (RSI) that aligns with Scottsdale Community College's mission to provide challenging and supportive learning

experiences and the US Department of Education's requirement for regular and substantive interaction (RSI) for online courses. My commitment to your success includes the following:

- Being available during regularly scheduled office hours as stated in the syllabus.
- Sharing weekly information about the course materials, including key information, explanations, examples, and resources via in-person, recorded, and/or text-based lectures.
- Providing group or individual feedback regularly on assignments.
- Promptly responding to student questions about the course sent via email or the Canvas inbox.
- Regularly posting announcements about the course content and activities.
- Monitor your academic progress and communicate concerns, as needed.

Response Time

Students can expect a response time of **24-48 hours** for the instructor to respond to messages sent via the Canvas Learning Management System or @maricopa.edu email. Students can expect assignments to be graded within **one week** of the assignment's due date.

Tutoring

SCC's tutors are available online to help with your courses. You may work with an SCC tutor remotely using Google Meet, your phone, or email. Visit the [Tutoring & Learning Centers](#) page for detailed information on the five learning centers' hours and procedures.

If you need to work with a tutor outside regular hours, online and hybrid students now have access to a 24/7 online tutoring service called Brainfuse. To access Brainfuse and begin working with a tutor, visit the [SCC Online Tutoring Services Through Brainfuse](#) page.

Suggested Tutoring (Natural Science)

Tutoring is available through the Natural Sciences Department. These tutors have access to our class assignments and so can help you much easier than an outside tutor. You can use this in a few different ways:

1. Go to the tutoring center as a place to work (room NS-107). You can do your assignments in this space and if you have questions someone is in the room to help. If they don't know the answer, my office is just down the hall. This is a great way to set aside time to work on this class (**particularly the labs**).
2. Go to the tutor center with questions. You can check the schedule for when a tutor is in and ask any questions you have had working through the class. While none of their tutors are listed for astronomy, any listed for physics (or even geology or chemistry) can help with most questions you will have.
3. Get tutoring online. You can directly contact a tutor online and get help fast with the problems you are working on.

Their website with all the information you need is at :

<https://www.scottsdalecc.edu/students/tutoring/natural-sciences-tutoring-center>

MCCCD Policies

MCCCD is committed to providing a safe, fair, and accessible environment for all students. This includes laws such as the ADA and Title IX, which protect against discrimination. These statements explain your rights, available support, and where to go for help or more information. Please review the following policies:

Classroom Accommodations for Students with Disabilities

In accordance with the Americans with Disabilities Act (ADA), the Maricopa County Community College District (MCCCD) and its associated colleges are committed to providing equitable access to learning opportunities to students with documented disabilities (e.g. physical, sensory, neurological, chronic illness, mental health, learning disabilities, or other health concerns). If you require accommodations for this course, please contact [Disability Resources and Services](#) (DRS) at your college.

Contact with [DRS](#) should be made as soon as possible to ensure academic needs are met in a reasonable time. Additional information can be found in the [Non-Discrimination Statement](#) and [MCCCD Non-Discrimination Policies](#).

[Addressing Incidents of Title IX Sexual Harassment](#)

Students are responsible for the information contained in this syllabus, the Syllabus page in the Canvas course, and the College Policies & Student Services page located under SCC Student Resources in the Canvas course navigation menu. The instructor will notify students of any changes to course requirements or policies.