



## Course Information

Semester & Year:	Spring 2025
Course Title:	Introduction to Solar System Astronomy
Course Prefix & Number:	AST111
Section Number:	31734 (Lecture) + 31735 (Lab)
Credit Hours:	4
Start Date:	01/28/2025
End Date:	05/09/2025
Room Number:	NS 400
Meeting Days:	Tuesday Thursday
Meeting Times:	12:30-1:55 (lecture) + 2:00-3:25 (lab)

## Course Format

The course format for this course is in-person.

## Instructor Information

Instructor:	Dr. Carver Bierson
Email:	Carver.Bierson@Scottsdalecc.edu
Phone:	480-423-6018
Office Location:	NS 128
Office Hours:	Astronomy Open Hours (NS-400): Wednesday 1-3pm

In-person Office Hours (NS-128): Tuesday and Thursday 9-11am

Online Office Hours: Monday and Fridays by appointment (see Canvas page)

**What to call me:** You are welcome to call me by any of the following: Carver, Dr. Carver, Professor Carver, Dr. Bierson, or Professor Bierson.

## Course Description

Introduction to astronomy for the non-science major. The scientific method, properties of light, astronomical instruments, our Solar System and solar systems around other stars. Includes hands-on astronomical observations and laboratory exercises.

## Prerequisites

Prerequisites: A grade of C or better in MAT092 or higher, or satisfactory district placement.

## Course Competencies

1. Apply the scientific method and other critical thinking models to astronomical phenomena for hypotheses development, experiment design, and data analysis. (I-VII)
2. Apply mathematical principles to astronomical data analysis. (I-VII)
3. Demonstrate the ability to follow directions in completing laboratory exercises. (I-VII)
4. Demonstrate the ability to properly and safely use laboratory tools. (I-VII)
5. Demonstrate the ability to work effectively in collaborative groups. (I-VII)
6. Explain the application of fundamental physical principles to various astronomical phenomena. (II-VII)
7. Use the motions of the planets around our Sun as seen from space to determine their positions as seen from Earth. (II)
8. Describe the features and motions of the celestial sphere and celestial objects and explain the causes of these motions. (II)
9. Describe, in terms of energy, wavelength, and frequency, the various portions of the electromagnetic spectrum and the optical instruments and methods used to detect them. (III-IV)
10. Describe the fundamental characteristics of stars, including their energy source, internal structure, temperature, and luminosity as they relate to solar system formation. (V)
11. Compare and contrast types and characteristics of planets found in solar systems, including internal structures, surface processes, and external environments. (VI)
12. Describe the origin and characteristics of small bodies in solar system, such as comets, asteroids, and meteors. (VI)

13. Explain possible models for the formation of solar systems and how those models are applied to our own Solar System as well as planets orbiting other stars. (VII)

## **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 Technologies**

View the [Accessibility Statements & Privacy Policies](#) of technologies used in this course.

## **Maricopa Systems**

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

- Canvas Learning Management System
- Student Maricopa Gmail Account
- Maricopa Open Educational Resource Learning System (MOER)

## **Student Assignment Tools**

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

- Google Products
- Microsoft Office 365
- ScreenPal
- Adobe Creative Cloud

## **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](#).

# 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.

## Generative Artificial Intelligence (AI) Policy

### Opening Statement Regarding Generative Artificial Intelligence (AI)

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 Bard, 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 & Practices

### Grade Scale

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

F	0 – 59%
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## Assignments

Assignment Name	Percent of Grade
Labs	30%
Weekly Reflections	15%
Weekly Quizzes	15%
Exams + Final Project	40%
Class Pre-test	1%
Class Post-test	1%
<b>TOTAL:</b>	<b>102%</b>

## Assignment Types

### Pre and Post Tests

You will get full points just for taking these quizzes regardless of how well you do. These are a tool for me to see how much you have learned over the class. These will be given in class.

### Weekly Quizzes

These will cover the topics covered up to the week of that quiz. Questions will be taken from those used in the lectures, labs, and lecture tutorials. These will be done in class. **Your lowest 2 weekly quiz grades will be dropped.**

### Weekly Reflections

Each week you will write a reflection about what you have done and learned for this class that week. You can talk about what you have done both in class and outside of class (readings, lecture, tutorials, videos). Discuss how your model of understanding planets and the solar system changes each week. **This will be submitted through Canvas.**

### Labs

Labs are where you will get a lot of hands on experience with the topics of this class. Generally there will be 1 lab per class period. **Your lowest 2 lab grades will be dropped.** Labs are done in person with time given to finish at home as needed.

### Exams and Final Project

This class will have 3 exams and 1 final project. Exams are cumulative, meaning they can include any material up to that point in the class. Exams will have 2 parts. The first is a traditional exam. This will be followed by a group exam where you can talk with anyone and use any notes or our textbook.

The final project will be group projects where you design your own NASA solar system mission. More details will be given towards the end of the class.

**The lowest of these 4 scores will be dropped.**

### Late work

Late work is not accepted in this class. All late work will receive a grade of zero. Read the next section for what to do if you have something come up.

### Late Tickets/missing class

Everyone in this class gets 2 late tickets. If you message me before an assignment is due to use a late ticket, I will extend the deadline on that assignment due date by 2 days. This can be used for labs or weekly reflections. This cannot be used for in class quizzes or Exams.

If you are going to miss class (because of illness or unexpected life events) send me a message to let me know (over canvas or email). I will not always provide an alternate assignment but I can tell you what was covered. A few of each assignment category are dropped to account for the fact that most people will miss one or two classes.

### Class Calendar

Week	Topics	Major Assignments
1	What is Astronomy	
2	The Night Sky	
3	Kepler's Laws and Gravity	
4	Seasons and moon phases	

5	Light and Spectra	Exam 1
6	Telescopes	
7	The Sun	
8	The Earth, Moon and Mercury	
9	Venus and Mars	
10	Giant Planets	Exam 2
11	Moons and small bodies	
12	Exoplanets and formation of the solar system	
13	Aliens	Exam 3
14	Finals week	Final Group Presentations

## Response Time

Students can expect a response time of 24 hours during business days (Monday-Friday) for the instructor to respond to messages sent via the Canvas Learning Management System or email. Students can expect assignments to be graded within 1-week of the assignment's due date.

## Attendance Policy

It is policy that students who do not attend the first class period are dropped from the course.

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. MCCCCD 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.

If you know you will be missing class, send me a message and I will work with you to find solutions for missing materials.

## Instructional Contact Hours (Seat Time)

This is a three (3) credit-hour course. Plan to spend at least three hours on course content or seat time (direct instruction) and six hours on homework weekly. Accelerated courses will require additional time per week.

## 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>

## Online 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 center's hours and procedures.

As much as possible, it is highly recommended that you utilize SCC tutors since they are more familiar with SCC coursework, instructor expectations, and assignments; however, 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. Brainfuse provides online tutoring in a variety of academic subjects. Each student may utilize up to 6 hours of online tutoring through Brainfuse per semester, and has the option of requesting additional time if needed.

To access Brainfuse and begin working with a tutor:

1. Visit the [SCC Online Tutoring Services Through Brainfuse](https://www.scottsdalecc.edu/students/tutoring/online-tutoring) page (https://www.scottsdalecc.edu/students/tutoring/online-tutoring)
2. Click the **Visit a tutor online** button
3. Enter your MEID and password
4. Choose your topic and subject
5. Click the **Connect** button

Please use your time effectively and be prepared with your questions before you connect to a tutor. Tutors and students communicate in real-time so whatever you type, draw, or share on the screen, the tutor sees, and vice versa. You may also want to have screenshots ready if applicable. All Brainfuse sessions are recorded for review later.

## Learning Tools and Your Privacy and Security

SCC utilizes a variety of software applications and web-based tools operated by third party vendors to support student learning. To allow student access to the application, site or tool, certain identifiable information may be required to establish a user name or password, and submit work and/or download information from these tools. Inherent with all internet-based tools, there is a risk that individuals assume when electing to use these tools, as they may place information at risk of disclosure.

To use learning tools responsibly, please observe all laws and the Maricopa Community College District [Student Conduct Code](#), such as copyright infringement, plagiarism, harassment or interference with the underlying technical code of the software. As a student using a learning tool, you have certain rights. Any original work that you produce belongs to you as a matter of copyright law. You also have a right to the privacy of your educational records. Your contributions to learning tools constitute an educational record. By using the tool, and not taking other options available to you in this course equivalent to this assignment that would not be posted publicly on the internet, you consent to the collaborative use of this material as well as to the disclosure of it in this course and potentially for the use of future courses.

Students are responsible for the information contained in this syllabus, the Syllabus page in your Canvas course and the **College Policies & Student Services** page found in the First Steps module of your Canvas course. Students will be notified by the instructor of any changes in course requirements or policies.