



# AstroPhysics I: The Sun & Stars (ASTRO 120)



Fall 2024  
SCI 04403/L

## Instructor



(Myself & husband in the back. My two nieces with SIL and her husband)

### Krista Hook

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#### Office Hours:

Monday:	4pm – 6pm
Tuesday:	1pm – 6pm
Wednesday:	4pm – 6pm
Thursday:	By Appointment
Friday:	4pm – 6pm
Email me for alternative meeting arrangements.	

<b>Required Materials</b>	<ul style="list-style-type: none"> <li>Astronomy – OpenStax (Online Text) <ul style="list-style-type: none"> <li><a href="#">Link HERE</a></li> </ul> </li> <li>Computer Access w/ Internet and <u>Microsoft Excel (or equivalent)</u></li> <li>Scientific Calculator (example: TI-30)</li> </ul>	
<b>Meeting Times</b>	<p><b>MWF: 2pm – 3pm (Class)</b> <b>R: 9am – 11am (Lab)</b></p>	
<b>BSU Credits</b>	<p><b>Ball State University:</b> College of Science and Humanities: Department of Physics and Astronomy <b>Course Credits: 3</b> <b>Course Name: ASTRO 120</b></p>	
<b>Course Requirements and Specifications</b>	<p><b>Co-requisite:</b> Astrophysics II Lab (SCI4403L)</p>	<p><b>Credit: 1.5 credits</b> <b>Offered: Fall</b></p>

## Course Content Overview

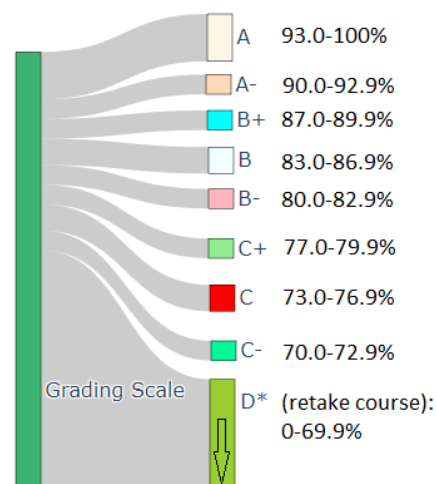
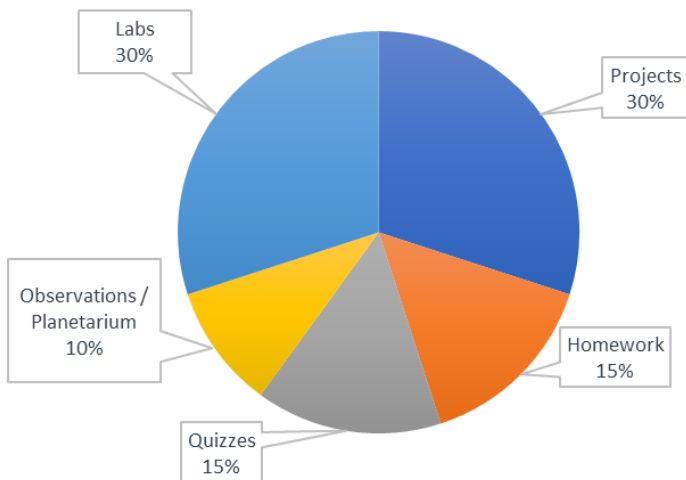
Welcome to Astrophysics I!

In this course, students will be introduced to the science underlying modern stellar astronomy. The sky is full of amazing objects and astronomers use the properties of light and matter to better understand the currently unreachable expanse of the universe. The properties of the sun and stars reveal the processes that govern their birth, life, and death, revealing insights into the remnants they leave behind (such as white dwarfs, neutron stars, and black holes!)

The course also includes lab experience, launching students into the analysis of astrophysical data with algebraic calculations and use of observational data to reveal natural physical laws that provide information about remote objects in space. There will also be the occasional required late evening sky observation (as weather permits) and the occasional field trip to the Ball State Planetarium (as scheduling permits).

\* Ball State University offers 3 college credit hours to students in ASTRO 120 to students who complete this course. Refer to the Dual Credit section for details on enrollment and fees.

# Grade Calculation & Scale



# Course Content & Mastery Goals for Exams

There are no Exams in this course.

There are categories listed below for content covered this semester. Throughout the semester, these different contents will be covered and assessed. The benefit of assessing and grading in this way is to afford students the opportunity to provide evidence of learning of a concept (such as Photometry) via projects and labs but not assessing students through stressful, singular exams. A final grade should reflect what a student KNOWS, independent of their journey to get there.

Therefore, it is essential that students:

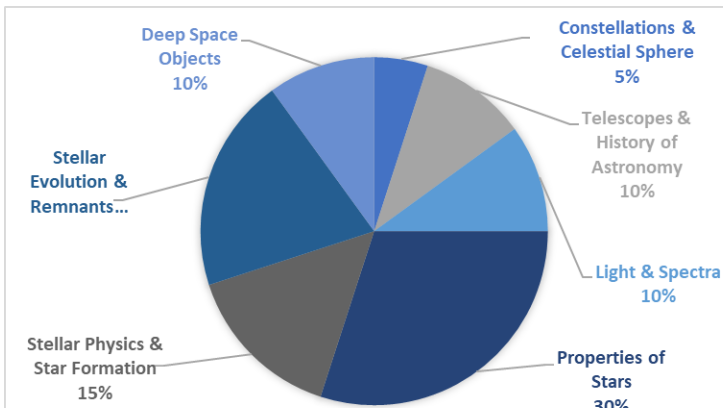
1. Complete assignments and use time given in class to work on them
2. Collaborate (but not copy or split assignments) with other students
  - a. Please review the collaboration section of this syllabus to better understand the expectations
  - b. Please review Academic Dishonesty in the Student Handbook
  - c. All work must be completed (in whole) by every student as their individual and independent work and not created in part or as a whole by more than one student.

The final exam will be a series of final projects (that can be completed before Finals Week).

Planetarium Visits do not include times when we, as a class, visit. These are visits you make to weekly shows the planetarium performs outside of class. Announcements will be made to remind you to go and instructions on how to provide reflections when needed.

## Concepts & Time Dedication

Constellations & Celestial Sphere	5%
Telescopes & History of Astronomy	10%
Light & Spectra	10%
Properties of Stars	30%
Stellar Physics & Star Formation	15%
Stellar Evolution & Remnants	20%
Deep Space Objects	10%
	100%



# Fall 2024 \*Tentative\* Semester Schedule

Week	Events	Lecture	Lab
1 Aug 12 – 16		Unit 1: Constellations & Celestial Sphere	Constellation Lab
2 Aug 19 – 23		Unit 2: Telescopes & History of Astronomy	Size of Space Lab
3 Aug 26 – 30	Aug 30 <sup>th</sup> – Friday Shadow Day	Unit 3: Light & Spectra (Lyman, Balmer, Paschen, and Brackett Series)	Constellation Project / Presentations
4 Sept 2 – Sep 6	Sep 2 <sup>nd</sup> – Monday Labor Day Break No School	Unit 4: Interstellar Medium and Star Formation	Planetarium Visit: "Our Night Sky" (Live Presentation)***
5 Sept 9 – 13		Unit 5: Properties of Stars	Differential Photometry Lab Spectroscopy Lab
6 Sept 16 – 20			HR Diagram & B-V Lab
7 Sept 30 – Oct 4	Oct 4 <sup>th</sup> - Friday Parent/Teacher Conferences		Habitable Planet Search Lab
8 Oct 7 – 11	Oct 7 <sup>th</sup> – 8 <sup>th</sup> – M/T Fall Break Oct 9 <sup>th</sup> – Wednesday PSAT		Exoplanet Search Lab
9 Oct 14 – 18			Stellar Distance Lab
10 Oct 21 – 25		Unit 6: Stellar Physics	Nuclear Fusion Lab
11 Oct 28 – Nov 1			
12 Nov 4 – 8	Nov 4 <sup>th</sup> – 8 <sup>th</sup> Student Evaluations	Unit 7: Stellar Evolution & Remnants	Roche Limit Lab
13 Nov 11 – 15	Nov 11 <sup>th</sup> – 15 <sup>th</sup> Spring Advising Nov 15 <sup>th</sup> LAST DAY to register for AP Exam	Unit 8: Deep Space Objects	Cluster Aging Lab
14 Nov 18 – 22			
15 Nov 25 – 29	Nov 25 <sup>th</sup> – 29 <sup>th</sup> Thanksgiving Break No School		
16 Dec 2 – 6			
17 Dec 9 – 13			Extra Credit Due ALL assignments & makeups DUE
18 Dec 16 – 20	Final Exam Week		

# Fall 2024 \*Tentative\* Planetarium Schedule

Visit 5 different Planetarium Shows & provide reflection for credit

Show	Dates & Times
<p><b><u>"Living Worlds" 5pm Planetarium Show</u></b>            Calendars: College of Sciences and Humanities, Physics and Astronomy            Living Worlds Whether earthly or alien, all life leaves a trace. Join narrator Daveed Diggs on a journey through space and time to discover how life makes Earth livable, where it could be found elsewhere in the cosmos, and what new technologies we might use to find it. Along the way, you'll learn how light and color can help us spot other living worlds even from vast distances—and develop a new appreciation for the one-of-a-kind planet right beneath our feet. Suitable for all ages 10+, all ages are welcome.</p>	<p><u>August 23<sup>rd</sup>, 2024 @ 5 p.m.</u>   <u>August 24<sup>th</sup>, 2024 @ 5 p.m.</u>   <u>August 30<sup>th</sup>, 2024 @ 5 p.m.</u>   <u>August 31<sup>st</sup>, 2024 @ 5 p.m.</u></p>
<p><b><u>"Summer Skies Live" 6:30pm Planetarium Show</u></b>  <b>6:30 p.m.</b>            Calendars: Physics and Astronomy, College of Sciences and Humanities            People often peer into the darkness of the night sky and wonder, “what is out there?” Seemingly dark regions of space are actually filled with nebulae, star clusters, and other galaxies. Come learn how to navigate the sky by using bright stars and constellations with the help of a star chart, and discover what fascinating objects exist deep in space. Most suitable for all ages 8+, all ages welcome.</p>	<p><u>August 23<sup>rd</sup>, 2024 @ 6:30 p.m.</u>   <u>August 24<sup>th</sup>, 2024 @ 6:30 p.m.</u>   <u>August 30<sup>th</sup>, 2024 @ 6:30 p.m.</u>   <u>August 31<sup>st</sup>, 2024 @ 6:30 p.m.</u></p>
<p><b><u>"Big Astronomy" 5pm Planetarium Show</u></b>  <b>5 p.m.</b>            Calendars: Physics and Astronomy, College of Sciences and Humanities            Big Astronomy Planetarium Show Poster with sunset sky in background It takes many people with diverse backgrounds, talents, and skills to run observatories. Journey to three world-class observatories in Chile’s rugged Andes Mountains and arid Atacama Desert— remote, extreme regions that happen to have the perfect conditions for astronomical research. Along the way, meet an inspiring cast of astronomers, engineers, technicians, and support staff who keep these mega-machines running and learn about their work. Suitable for all ages 10+, all ages are welcome.</p>	<p><u>September 13<sup>th</sup> @ 5 p.m.</u>   <u>September 14<sup>th</sup> @ 5 p.m.</u>   <u>September 20<sup>th</sup> @ 5 p.m.</u>   <u>September 21<sup>st</sup> @ 5 p.m.</u></p>
<p><b><u>"We Are Stars" 6:30pm Planetarium Show</u></b>  <b>6:30 p.m.</b>            Calendars: College of Sciences and Humanities, Physics and Astronomy            We Are Stars Image Narrated by Andy Serkis, this program seeks to answer some of the biggest questions of all time. What are we made of? Where did it all come from? Explore the secrets of our cosmic chemistry, our explosive origins and connect life on Earth to the evolution of the Universe. A family-friendly film full of fun, adventure, and enlightenment. Most suitable for all ages 8+, all ages welcome.</p>	<p><u>September 13<sup>th</sup> @ 6:30 p.m.</u>   <u>September 14<sup>th</sup> @ 6:30 p.m.</u>   <u>September 20<sup>th</sup> @ 6:30 p.m.</u>   <u>September 21<sup>st</sup> @ 6:30 p.m.</u></p>

<p><b><u>"Halloween: Celestial Origins" 6:30pm Planetarium Show</u></b>  <b>6:30 p.m.</b>  Calendars: College of Sciences and Humanities, Physics and Astronomy  Halloween show poster  What do you associate with Halloween? Trick-or-Treating, costumes... astronomy? After all, Halloween is an astronomical holiday! During this program you will learn the history of Halloween and how it fits into the seasons as a “cross-quarter day.” We will also explore the night sky and learn what planets, constellations, and stars will be out on your Halloween evening. Suitable for all ages 8+, all ages are welcome.</p>	<p><u>October 4<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>October 5<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>October 11<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>October 12<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>October 18<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>October 19<sup>th</sup> @ 6:30 p.m.</u></p>
<p><b><u>"Earth, Moon, and Sun" 3:30pm Planetarium Show</u></b>  <b>3:30 p.m.</b>  Calendars: College of Sciences and Humanities, Physics and Astronomy  Earth, Moon and Sun  Coyote has many misconceptions about our home planet and its most familiar neighbors. His confusion about the universe makes viewers think about how Earth, Moon and Sun work together as a system and learn to distinguish between myths and science. Learn the basics of fusion and solar energy and why the Sun rises and sets. Best suited for families and groups with kids ages 8+, all ages are welcome.</p>	<p><u>October 5<sup>th</sup> @ 3:30 p.m.</u></p> <p><u>October 12<sup>th</sup> @ 3:30 p.m.</u></p> <p><u>October 19<sup>th</sup> @ 3:30 p.m.</u></p>
<p><b><u>"Saturn &amp; Beyond" 5pm Planetarium Show</u></b>  <b>5 p.m.</b>  Calendars: College of Sciences and Humanities, Physics and Astronomy  Saturn and Beyond Planetarium Show  Saturn’s rings are one of the most beautiful sights in the solar system. They can be seen clearly even with a small backyard telescope. Astronomers have known about these rings for over 400 years, yet they still present many questions. In 2004 the Cassini orbiter and the Huygens probe reached Saturn. During this show we will explore the mysterious features seen by these spacecraft. Suitable for all ages 10+, all ages are welcome.</p>	<p><u>October 12<sup>th</sup> @ 5 p.m.</u></p> <p><u>October 19<sup>th</sup> @ 5 p.m.</u></p>
<p><b><u>Astronomy SLAM!</u></b>  <b>6:30 p.m.</b>  Calendars: College of Sciences and Humanities, Physics and Astronomy  Astronomy Slam  Cost: \$4/person, click link for information. During this event, Ball State students use planetarium visuals to present in the most creative way they can while competing. Ten minutes a person—that is all the time they have to share a piece of our universe with you in the planetarium in an effort to win Astronomy Slam Champion. Suitable for all ages 10+, all ages are welcome. Interested in being a student presenter? Fill out the presenter interest form online by September 27, 2024.</p>	<p><u>November 2<sup>nd</sup> @ 6:30 p.m.</u></p>
<p><b><u>"The Universe Update" 6:30pm Planetarium Show</u></b>  <b>6:30 p.m.</b>  Calendars: College of Sciences and Humanities, Physics and Astronomy  Universe Update  Winter Night Sky Poster  Travel through our universe in both space and time during this live presentation and learn about the most recent and exciting astronomy news. Hear updates about the JWST team and their</p>	<p><u>November 8<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>November 9<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>November 15<sup>th</sup> @ 6:30 p.m.</u></p>

<p>findings, learn about stellar evolution and black holes, and find out how space exploration and research can help us out on Earth. Suitable for all ages 12+, all ages are welcome.</p>	<p><u>November 16<sup>th</sup> @ 6:30 p.m.</u></p>
<p><b><u>"Birth of Planet Earth" 5pm Planetarium Show</u></b>  <b>5 p.m.</b>          Calendars: College of Sciences and Humanities, Physics and Astronomy          The Birth of Planet Earth How did Earth come to be a life-supporting planet? Where did our Moon come from? What does Earth's history tell us about our chances of finding other worlds that are truly Earth-like? This show tells the twisted tale of our planet's origins, and helps us explore the potential of other possible worlds like our own. Suitable for all ages 10+, all ages are welcome.</p>	<p><u>November 9<sup>th</sup> @ 5 p.m.</u></p> <p><u>November 16<sup>th</sup> @ 5 p.m.</u></p>
<p><b><u>"The Christmas Star" 6:30pm Planetarium Show</u></b>          Calendars: College of Sciences and Humanities, Physics and Astronomy          Christmas star poster Over the years many people have tried to explain the appearance of the Star of Bethlehem, as described in the Bible. Can the star be explained as an exploding star, a comet, or some other natural event in the sky? Potential natural explanations for the Star of Bethlehem and common modern-day misconceptions will be discussed. Suitable for all ages 10+, all ages are welcome.</p>	<p><u>December 6<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>December 7<sup>th</sup> @ 5 p.m.</u></p> <p><u>December 7<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>December 13<sup>th</sup> @ 6:30 p.m.</u></p> <p><u>December 14<sup>th</sup> @ 5 p.m.</u></p> <p><u>December 14<sup>th</sup> @ 6:30 p.m.</u></p>

# Astronomical Events Visible with the Naked Eye – Fall 2024\*

\*This will be updated frequently as needed

Event Date	Event
August 12 – 13 (peak)	<b>Perseids Meteor Shower.</b> The Perseids is one of the best meteor showers to observe, producing up to 60 meteors per hour at its peak.
August 19	<b>Full Moon, Blue Moon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 18:27 UTC. This full moon was known by early Native American tribes as the Sturgeon Moon because the large sturgeon fish of the Great Lakes and other major lakes were more easily caught at this time of year. This moon has also been known as the Green Corn Moon and the Grain Moon. Since this is the third of four full moons in this season, it is known as a blue moon. This rare calendar event only happens once every few years, giving rise to the term, “once in a blue moon.”
September 3	<b>New Moon.</b> The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 01:57 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.
September 8	<b>Saturn at Opposition.</b> The ringed planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Saturn and its moons. A medium-sized or larger telescope will allow you to see Saturn's rings and a few of its brightest moons.
September 18	<b>Full Moon, Supermoon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 02:36 UTC. This moon is also known as the Harvest Moon. The Harvest Moon is the full moon that occurs closest to the September equinox each year. This is also the first of three supermoons for 2024. The Moon will be near its closest approach to the Earth and may look slightly larger and brighter than usual.
September 18	<b>Partial Lunar Eclipse.</b> A partial lunar eclipse occurs when the Moon passes through the Earth's partial shadow, or penumbra, and only a portion of it passes through the darkest shadow, or umbra. During this type of eclipse a part of the Moon will darken as it moves through the Earth's shadow. The eclipse will be visible throughout most of North America, Mexico, Central America, South America, the Atlantic Ocean, and most of Europe and Africa. ( <a href="#">NASA Map and Eclipse Information</a> )
September 20	<b>Neptune at Opposition.</b> The blue giant planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Neptune. Due to its extreme distance from Earth, it will only appear as a tiny blue dot in all but the most powerful telescopes.
September 22	<b>Autumnal Equinox.</b> The September equinox occurs at 06:43 UTC. The Sun will shine directly on the equator and there will be nearly equal amounts of day and night throughout the world. This is also the first day of fall (autumnal equinox) in the Northern Hemisphere and the first day of spring (vernal equinox) in the Southern Hemisphere.
October 2	<p><b>New Moon.</b> The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 18:51 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.</p> <p><b>Annular Solar Eclipse.</b> An annular solar eclipse occurs when the Moon is too far away from the Earth to completely cover the Sun. This results in a ring of light around the darkened Moon. The Sun's corona is not visible during an annular eclipse. The eclipse path will begin in the Pacific Ocean off the coast of South America and</p>

	move across parts of southern Chile and Argentina. A partial eclipse will be visible throughout most of southern South America. ( <a href="#">NASA Map and Eclipse Information</a> ) ( <a href="#">NASA Interactive Google Map</a> )
<b>October 7 (peak)</b>	<b>Draconids Meteor Shower.</b> The Draconids is a minor meteor shower producing only about 10 meteors per hour. It is produced by dust grains left behind by comet 21P Giacobini-Zinner, which was first discovered in 1900. The best viewing is in the early evening. The shower runs annually from October 6-10 Meteors will radiate from the constellation Draco, but can appear anywhere in the sky.
<b>October 17</b>	<b>Full Moon, Supermoon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 11:28 UTC. This moon has also been known as the Travel Moon and the Blood Moon. This is also the second of three supermoons for 2024. The Moon will be near its closest approach to the Earth and may look slightly larger and brighter than usual.
<b>October 21 – 22 (peak)</b>	<b>Orionids Meteor Shower.</b> The Orionids is an average shower producing up to 20 meteors per hour at its peak. It is produced by dust grains left behind by comet Halley, which has been known and observed since ancient times. The shower runs annually from October 2 to November 7. It peaks this year on the night of October 20 and the morning of October 21. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Orion, but can appear anywhere in the sky.
<b>November 1</b>	<b>New Moon.</b> The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 12:49 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.
<b>November 4 – 5 (peak)</b>	<b>Taurids Meteor Shower.</b> The Taurids is a long-running minor meteor shower producing only about 5-10 meteors per hour. It is unusual in that it consists of two separate streams. The first is produced by dust grains left behind by Asteroid 2004 TG10. The second stream is produced by debris left behind by Comet 2P Encke. The shower runs annually from September 7 to December 10. The best viewing will be just after midnight from a dark location far away from city lights. Meteors will radiate from the constellation Taurus but can appear anywhere in the sky.
<b>November 15</b>	<b>Full Moon, Supermoon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 21:30 UTC. It has also been known as the Frosty Moon and the Dark Moon. This is also the last of three supermoons for 2024. The Moon will be near its closest approach to the Earth and may look slightly larger and brighter than usual.
<b>November 16</b>	<b>Mercury at Greatest Eastern Elongation.</b> The planet Mercury reaches greatest eastern elongation of 22.5 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the western sky just after sunset.
<b>November 17</b>	<b>Uranus at Opposition.</b> The blue-green planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view Uranus. Due to its distance, it will only appear as a tiny blue-green dot in all but the most powerful telescopes.
<b>November 17 – 18 (peak)</b>	<b>Leonids Meteor Shower.</b> The Leonids is an average shower, producing up to 15 meteors per hour at its peak. This shower is unique in that it has a cyclonic peak about every 33 years where hundreds of meteors per hour can be seen. That last of these occurred in 2001. The Leonids is produced by dust grains left behind by comet Tempel-Tuttle, which was discovered in 1865. The shower runs annually from



	November 6-30. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Leo, but can appear anywhere in the sky.
<b>December 1</b>	<b>New Moon.</b> The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 06:22 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.
<b>December 7</b>	<b>Jupiter at Opposition.</b> The giant planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Jupiter and its moons. A medium-sized telescope should be able to show you some of the details in Jupiter's cloud bands. A good pair of binoculars should allow you to see Jupiter's four largest moons, appearing as bright dots on either side of the planet.
<b>December 13 – 14 (peak)</b>	<b>Geminid Meteor Shower.</b> The Geminids is the king of the meteor showers. It is considered by many to be the <u>best shower</u> in the heavens, producing up to 120 multicolored meteors per hour at its peak. It is produced by debris left behind by an asteroid known as 3200 Phaethon, which was discovered in 1982. The shower runs annually from December 7-17. This should be a great year for the Geminids. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Gemini but can appear anywhere in the sky.
<b>December 15</b>	<b>Full Moon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 09:03 UTC. This moon has also been known as the Long Nights Moon and the Moon Before Yule.
<b>December 21</b>	<b>Winter Solstice.</b> The December solstice occurs at 03:21 UTC. The South Pole of the earth will be tilted toward the Sun, which will have reached its southernmost position in the sky and will be directly over the Tropic of Capricorn at 23.44 degrees south latitude. This is the first day of winter (winter solstice) in the Northern Hemisphere and the first day of summer (summer solstice) in the Southern Hemisphere.
<b>December 21 – 22 (peak)</b>	<b>Ursids Meteor Shower.</b> The Ursids is a minor meteor shower producing about 5-10 meteors per hour. It is produced by dust grains left behind by comet Tuttle, which was first discovered in 1790. The shower runs annually from December 17-25. It peaks this year on the night of the 21st and morning of the 22nd. The waxing gibbous moon will block out most of the faintest meteors this year. But if you are patient, you should still be able to catch a few good ones. Best viewing will be just after midnight from a dark location far away from city lights. Meteors will radiate from the constellation Ursa Minor, but can appear anywhere in the sky.
<b>December 25</b>	<b>Mercury at Greatest Western Elongation.</b> The planet Mercury reaches greatest western elongation of 22 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet low in the eastern sky just before sunrise.
<b>December 30</b>	<b>New Moon.</b> The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 22:28 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.

# Astronomical Events Visible with the Naked Eye – Spring 2025\*

\*This will be updated frequently as needed

Event Date	Event
January 3 – 4 (peak)	<b>Quadrantids Meteors.</b> The first major meteor shower of 2024, the Quadrantids, peaks on the night of January 3 and the early morning hours of January 4.
January 10	<b>Venus at Greatest Eastern Elongation.</b> The planet Venus reaches greatest eastern elongation of 47.2 degrees from the Sun. This is the best time to view Venus since it will be at its highest point above the horizon in the evening sky. Look for the bright planet in the western sky after sunset.
January 13	<b>Full Moon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 22:28 UTC. This full moon was known by early Native American tribes as the Wolf Moon because this was the time of year when hungry wolf packs howled outside their camps. This moon has also been know as the Old Moon and the Moon After Yule.
January 16	<b>Mars at Opposition.</b> The red planet will be at its closest approach to Earth and its face will be fully illuminated by the Sun. It will be brighter than any other time of the year and will be visible all night long. This is the best time to view and photograph Mars. A medium-sized telescope will allow you to see some of the dark details on the planet's orange surface.
January 29	<b>New Moon.</b> The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 12:37 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.
February 12	<b>Full Moon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 13:55 UTC. This full moon was known by early Native American tribes as the Snow Moon because the heaviest snows usually fell during this time of the year. Since hunting is difficult, this moon has also been known by some tribes as the Hunger Moon, since the harsh weather made hunting difficult.
February 28	<b>New Moon.</b> The Moon will located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 00:46 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.
March 8	<b>Mercury at Greatest Eastern Elongation.</b> The planet Mercury reaches greatest eastern elongation of 18.2 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the evening sky. Look for the planet low in the western sky just after sunset.
March 14	<b>Full Moon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be will be fully illuminated. This phase occurs at 06:56 UTC. This full moon was known by early Native American tribes as the Worm Moon because this was the time of year when the ground would begin to soften and the earthworms would reappear. This moon has also been known as the Crow Moon, the Crust Moon, the Sap Moon, and the Lenten Moon.
March 14	<b>Total Lunar Eclipse.</b> A total lunar eclipse occurs when the Moon passes completely through the Earth's dark shadow, or umbra. During this type of eclipse, the Moon will gradually get darker and then take on a rusty or blood red color. The eclipse will be visible throughout all of North America, Mexico, Central America, and South America. ( <a href="#">NASA Map and Eclipse Information</a> )

<b>March 20</b>	<b>March Equinox or Vernal Equinox.</b> The March equinox is the first day of spring in the Northern Hemisphere and the start of fall in the Southern Hemisphere, by astronomical definitions.
<b>March 29</b>	<b>New Moon.</b> The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 11:00 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.
<b>March 29</b>	<b>Partial Solar Eclipse.</b> A partial solar eclipse occurs when the Moon covers only a part of the Sun, sometimes resembling a bite taken out of a cookie. A partial solar eclipse can only be safely observed with a special solar filter or by looking at the Sun's reflection. This partial eclipse will be visible throughout Greenland and most of northern Europe and northern Russia. It will be best seen from Canada with 93% coverage. ( <a href="#">NASA Map and Eclipse Information</a> )
<b>April 13</b>	<b>Full Moon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 00:24 UTC. This full moon was known by early Native American tribes as the Pink Moon because it marked the appearance of the moss pink, or wild ground phlox, which is one of the first spring flowers. This moon has also been known as the Sprouting Grass Moon, the Growing Moon, and the Egg Moon. Many coastal tribes called it the Fish Moon because this was the time that the shad swam upstream to spawn.
<b>April 21</b>	<b>Mercury at Greatest Western Elongation.</b> The planet Mercury reaches greatest western elongation of 27.4 degrees from the Sun. This is the best time to view Mercury since it will be at its highest point above the horizon in the morning sky. Look for the planet low in the eastern sky just before sunrise.
	<b>Lyrid Meteor Shower.</b> The Lyrids is an average shower, usually producing about 20 meteors per hour at its peak. It is produced by dust particles left behind by comet C/1861 G1 Thatcher, which was discovered in 1861.
<b>April 27</b>	<b>New Moon.</b> The Moon will be located on the same side of the Earth as the Sun and will not be visible in the night sky. This phase occurs at 19:32 UTC. This is the best time of the month to observe faint objects such as galaxies and star clusters because there is no moonlight to interfere.
<b>May 6 – 7</b>	<b>Eta Aquarids Meteor Shower.</b> The Eta Aquarids is an above average shower, capable of producing up to 60 meteors per hour at its peak. Most of the activity is seen in the Southern Hemisphere. In the Northern Hemisphere, the rate can reach about 30 meteors per hour. It is produced by dust particles left behind by comet Halley, which has been observed since ancient times. The shower runs annually from April 19 to May 28. It peaks this year on the night of May 6 and the morning of the May 7. The waxing gibbous moon will block out some of the fainter meteors this year. But if you are patient, you should still be able to catch some of the brighter ones. Best viewing will be from a dark location after midnight. Meteors will radiate from the constellation Aquarius, but can appear anywhere in the sky.
<b>May 12</b>	<b>Full Moon.</b> The Moon will be located on the opposite side of the Earth as the Sun and its face will be fully illuminated. This phase occurs at 16:57 UTC. This full moon was known by early Native American tribes as the Flower Moon because this was the time of year when spring flowers appeared in abundance. This moon has also been known as the Corn Planting Moon and the Milk Moon.

# Classroom Policies\*

\*Subject to change as the need arises.

## IA Wireless Device Policy:

Pursuant to Indiana Code 20-26-5-40.7, The Indiana Academy for Science, Mathematics and Humanities prohibits student use of wireless communication devices for non-instructional purposes in the classroom. As such, any and all portable wireless devices, that have the capability to provide voice, messaging, or other data communication between two or more parties, must only be used for academic purposes directly tied to the classroom activity or related educational task. Exceptions to this wireless device policy are eligible through academic accommodations, individualized education programs, or with instructor approval permitting the use of a wireless device for justification related to health, safety, and/or well-being. The improper use of a wireless device in an active classroom setting is subject to disciplinary action including but not limited to; a verbal warning, temporary seizure of said device by a school official, an unexcused absence for the class in question, written communication to parent/guardian, among other elevated consequences for repeated improper use.

Laptops or tablets are required for lab sessions.

Laptops or tablets are also required for some homework, quizzes, and other activities, including during class for note-taking or other class-related needs.

No game-playing, movie-watching, e-mail, or IM'ing allowed in class -- doing so will result in a recorded absence for that day. Laptops/iPads, if available, should be brought to class during laboratory sessions. This is so you can record, graph, and analyze your data in real-time, both to save you time AND to catch errors as they happen! Use of electronic devices for any other use during lecture is forbidden without prior agreement with the instructor. (And I will give permission if the use is "reasonable"!)

While in class or lab, please keep computer use restricted to classroom-relevant tasks.

Assignments must be submitted digitally on Canvas as a PDF or .DOCX file and data as .JPEG, .PNG, or .XLSX. Data analysis must be submitted as a .XLSX (other formats do not open in Canvas). Google sheets or other links to external sources of your submissions will not be accepted.

Lab reports focus on writing skills, an essential aspect of any professional skillset.

## Inclusive Excellence Statement:

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff and student body. We are committed to ensuring that all members of the community are welcome through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our Beneficence Pledge. As a reflection of Ball State's commitment to respect, civil discourse, and the Beneficence Pledge, Inclusive Excellence at the Indiana Academy emerges as one of the priorities of our living and learning community. We strive to exist together respectfully and compassionately, creating an environment where every member can thrive. Unfortunately, there might be occasions when something occurs that disrupts our progress toward meeting these objectives. In this case, we encourage any member of the Academy community to file a Campus Climate Report (CCR) [https://bsu.qualtrics.com/jfe/form/SV\\_6mbRbL5acAntUTI](https://bsu.qualtrics.com/jfe/form/SV_6mbRbL5acAntUTI). All reports will be taken seriously, and appropriate responses will be carried out by Academy administration.

I truly believe in this policy, and endeavor to go above and beyond in our classroom setting. If you see any behavior that goes against the above policy (even if it's mine!), please bring it to my attention (or have someone you trust do so if you are hesitant). Alternatively, you can find the appropriate form at [academy.bsu.edu/forms](http://academy.bsu.edu/forms) to report the incident directly to your DEI Coordinator.

## Withdrawal Deadlines

If you wish to drop your class(es), you must do so by the deadline.

The withdrawal deadline will be announced once published by the University Registrar.

Dropping/Withdrawing from a class at your high school does not drop/withdraw you from your BSU Dual Credit class. Instructions for dropping/withdrawing can be found in the Dual Credit Student and Parent Handbook.

## Attendance Policy

You have made a commitment toward academic achievement by attending the Academy – both attendance and integrity are essential components to that success. Class and lab attendance is **mandatory**.

It is the policy of the Indiana Academy that any absence from class is unexcused, except for illness, death in the family, college or school-related activities, and extenuating circumstances. When a student is absent from a class, the instructor reports the student absence to the Faculty Attendance Coordinator in the Office of Academic Affairs. Unless the absence is excused by a school official, it is considered unexcused. The decision as to whether an absence is excused is not determined by the instructor. Four or more unexcused absences in any particular class a student takes will lead to academic and residential consequences to be determined by the Office of Academic Affairs and the Office of Residential Life that may include detention, residential groundings, parent/principal conference, among others.

Students who are absent unexcused from class (two or more each semester) are subject to detention during non-class hours, restrictions, suspension, removal from class, or other consequences deemed appropriate by the Director of Academic Affairs or designee. Classes that meet for consecutive periods of more than 50 minutes at a time will be subject to greater penalties. Parents/guardians are notified of all unexcused absences.

Due to the intense, rigorous nature of Indiana Academy classes it is important that students be present during all class meetings. If a student's total number of absences (both excused and unexcused) reaches at least 20 percent of the number of scheduled class meetings during a semester, the student's case may be reviewed for possible submission to the Intervention and Retention Committee. The Intervention and Retention Committee may recommend removing the student from the class, dismissal from the Academy, probationary conditions, or other actions most appropriate to the particular case.

Being present, providing effort, and offering kindness in pursuit of academic excellence are foundational expectations of each and every student at the Indiana Academy.

Attendance is mandatory. Students may receive excused absences at the professional discretion of the school nurse, the associate director of mental health services, the associate director of college counseling and student engagement, the director of academic affairs, and the executive director of the Indiana Academy. Unexcused absences occur when students miss class without prior approval from the aforementioned designated school officials. Continued absences (both excused and unexcused) from Academy classes increase the likelihood of unsuccessful completion.

Class attendance is mandatory. An unexcused absence on the day of a lab or test will result in an automatic zero for that lab or test. Missing homework, quizzes and/or tests during an excused absence must be made up as soon as possible. It is the student's responsibility to make arrangements with the teacher.

- Homework: Homework is graded by completion (attempting all of them and failing is far more important than only trying half of them and succeeding). Homework assignments turned in on time will automatically be counted as an A (100%) in the course. Late work will be accepted at any time, but will be counted as a D\* (40%) in the course.

- Labs & Projects: \*Most\* labs and projects are also graded on completion (in part or in whole). Most will be graded on accuracy on a case-by-base basis. If you miss a lab due to an excused absence, we will make up the lab at a later date. Contact me ASAP to schedule this.

· Quizzes: As mentioned elsewhere in this document, quizzes are intended as a secondary check of conceptual comprehension. Some of it will be practical, others more conceptual. Take these seriously as they are also part of your total grade.

It is also important that your brain be here as well as your body. Students who fall asleep in class (I'm not \*that\* boring!) will receive either a 'tardy' or an 'absent' mark from the instructor, depending on circumstances. Make sure you avoid this by getting enough sleep the night before!

Late arrivals after 15 minutes into class-time will result in an absence for that day. No exceptions. Excused absences must be arranged before class starts, the paperwork must be filed with Ms. Drumm, Attendance Coordinator.

Students arriving after the start of class may receive a Tardy.

Student is responsible for all information missed due to not being present.

## **Behavioral Norms**

Alongside steady attendance, students are expected to maintain consistent healthy habits of decorum, respect, and kindness towards their classmates, instructors, and teaching assistants. When students fail to meet these classroom behavioral standards and academic habits, it is the expectation faculty engage appropriately to bring quick and immediate resolution. When students consistently fail to meet these behavioral standards and academic habits in the classroom, an administrative consequence ladder will be adopted, and recorded, in attempt to administratively address, engage, and rectify ongoing challenges.

To encourage continued attendance, discourage chronic absenteeism, and to increase the likelihood of successful course completion, students who are absent...

1. Unexcused from three or more class periods for courses that meet three times a week;
2. Unexcused from two or more class periods for courses that meet twice per week;
3. Unexcused from one or more class periods for courses that meet once per week;
4. From courses where the total of excused and unexcused absences reaches at least 20% of the number of scheduled class meetings during a semester;
5. By consistently leaving class early or coming in late without adequate justification or academic affairs pre-approval;

...are subject to penalties along the consequence ladder including but not limited to, residential groundings, non-residential lounge restrictions, structured supervision during non-class hours, extracurricular and athletic restrictions, suspension, administrative grade reductions, removal from class, among other appropriate actions recommended by the Director of Academic Affairs or designee. Parents/guardians are notified of all unexcused absences.

Similarly, to encourage healthy habits, vibrant classrooms, and respectful interactions among members of our community, students found to be in violation of our behavioral norms and classroom standards are subject to penalties along the consequence ladder including but not limited to, residential groundings, non-residential lounge restrictions, structured supervision during non-class hours, extracurricular and athletic restrictions, suspension, administrative grade reductions, removal from class, among other appropriate actions recommended by the Director of Academic Affairs or designee. The consequence ladder below represents the stair stepped approach administrators within academic affairs use to address and engage students that find themselves in violation of our academic, community, and norm standards. On occasion, penalties and consequences for violating academic excellence standards will reflect the specifics of a particular situation and thus be handled on a case by case basis.

### **TIER 1: WARNING**

- For students referred to academic affairs administration in violation of our community and academic behavioral standards.

- For students with 6 or more total unexcused absences

Grounding to building, 3 nights (not weekend). NECP: Letter sent to family.

### **TIER 2: ENGAGEMENT**

- For students referred to academic affairs administration in multiple violations of our community and academic behavioral standards.

- For students with 12 or more total unexcused absences  
- For students found to be in violation of Academy academic integrity policies  
Grounding to floor, 3 nights (not weekend). Meeting with family and Associate Director of College Counseling and Student Engagement. Loss of leadership role (if applicable). NECP: No lounge privileges, structured supervision if on premises after 4pm.

#### TIER 3: PROBATION

- For students consistently in violation of our community and academic behavioral standards.  
- For students with 18 or more total unexcused absences  
- For students with two violations of Academy academic integrity policies.  
Structured supervision for 3 school days. Meeting with family and Director of Academic Affairs. No longer eligible for athletics or school clubs. NECP: Structured supervision until pick-up by guardian.

#### TIER 4: VIOLATION OF PROBATION

- For students that have exhibited inability to reside within our academic community.  
- For students with 24 or more total unexcused absences  
- For students with three, or more, violations of Academy academic integrity policies.  
Recommendation for dismissal sent to executive director of Indiana Academy.

#### TIER 5: DISMISSAL

Student is dismissed from the Academy, effective immediately.

### **Late Work Policy**

Late work is defined as work that is submitted more than 24 hrs past the deadline outlined by myself or on Canvas. Any work not submitted automatically is scored as a zero until submitted within 24 hours after the deadline (0 pts.).

If work is submitted but it has been more than 24 hrs since it was due, the work will be graded with a 50% deduction of points in the gradebook, regardless of delay or reason.

Last day to submit late work will be the Friday BEFORE finals week. After this time, all zeroes (0 pts.) will remain and cannot be made-up or submitted for points.

All work not submitted will receive a zero.

### **Additional Points**

Email me one, school-appropriate, cute photo of a pet (if pet is not your pet, please acquire permission to photograph and submit before doing so). These photos will be presented to the class during the in-class final exam review. Deadline: The Friday BEFORE finals week each semester. Worth: +1% on any mastery exam category of the student's choice at the end of each semester.

### **Student Accommodation Policy**

Students possessing an educational 504 or IEP should contact the instructor as soon as possible to arrange for any accommodations that may be needed. Likewise, if you feel that you could benefit from an educational 504 or IEP, feel free to contact the instructor to this regard.

I am willing to help students succeed, so feel free to request accommodations with or without the above criteria.

### **Collaboration Policy**

There will be moments in this course that I encourage everyone to collaborate, or work together, to achieve success. These may include grouping students during difficult assignments, labs, or a general encouragement to seek each other for assistance in my course.

Collaboration does not mean: copying or otherwise plagiarizing work from others (or A.I. generated content), dividing work amongst two or more individuals, or sending/providing completed work for others to review.

Collaboration is a form of actively helping each other in ways that allow all individuals to complete their own work but in a way that allows them to ask questions, get feedback, and improve performance.

All work submitted in my course (including work meant to be completed as a group) must be solely the work of the individual submitting it. This means you are writing your own report, for example, but you are free to discuss and compare each other's work before submission. Collaborations are consultations only.

Please refer to the handbook concerning Academic Dishonesty and the policies concerning consequences.

There are also student groups, such as the National Honor Society (NHS), and other student orientated parts of the Indiana Academy that have their own consequences concerning Academic Dishonesty. Be aware that many of these consequences begin with immediate expulsion due to infringement of Academy Dishonesty policies.

## Resources Available to You

### The Writing Center

All writers improve with practice and feedback, so as a student in this course, you are encouraged to use the Writing Center (in Robert Bell 295, Bracken Library, or online) to get additional feedback on your writing. To schedule a free appointment to discuss your writing, go to [www.bsu.edu/writingcenter](http://www.bsu.edu/writingcenter).

Online and in-person appointments are available seven days a week; however, plan ahead because appointments book quickly!

### The Learning Center

The Learning Center offers free Tutoring and Academic Coaching for many courses at Ball State. Students can make appointments for online (Zoom) or in-person (NQ 350) appointments.

To make an appointment, visit [my.bsu.edu](http://my.bsu.edu) and click on "TutorTrac" in the Additional Tools section, or just go directly to <https://ballstate.go-redrock.com>.

Testing accommodations for students with disabilities are available for students who have received the appropriate documentation from Disability Services. Tests may be administered in the Learning Center.

Supplemental Instruction is available in select courses. If you have an SI leader for your course, that person will provide students with information the first week of school regarding weekly study sessions.

For more information about all of our programming, visit <https://bsu.edu/learningcenter> or call (765) 285-1006.

## Important Information You May Need to Know

### Dual Credit-High School Credit Policy Statement

Students may choose to enroll in Ball State's Dual Credit Program to earn college credit for ASTR 120, the Sun and Stars, from Ball State at a reduced rate of tuition (\$250 flat rate). Students who are eligible for free or reduced lunch this academic year may enroll at no charge if verified by the school.

To enroll in Ball State's Dual Credit Program, students should have a 3.0 GPA on a 4.0 scale and complete the application & registration process before the given deadline. Ball State will bill students via postal mail; no money should be submitted to the high school. College credit can only be earned during the semester (or, in the case of year-long classes, during the academic year) in which the student is enrolled. Late enrollments are not permitted.



Whether college credit earned through dual credit courses will be accepted by another institution of higher education is determined by the college or university to which a student is seeking admission. Before enrolling through Ball State's Dual Credit Program, students should check directly with that institution to determine if a course will be accepted and how it will be counted toward graduation requirements. Refunds will not be issued if Ball State credits are not able to be transferred. In most cases, students will need to earn a C or better to transfer credit from Ball State to another institution. Grades of D or lower earned in Ball State Dual Credit courses are recorded on a student's Ball State transcript but may not be able to transfer.

The rigor of this course will be periodically reviewed by Ball State University faculty in an effort to maintain the high quality of education that each student receives. To learn more about Ball State's Dual Credit Program, visit [bsu.edu/dualcredit](http://bsu.edu/dualcredit), call 765-285-1581 or email [dualcredit@bsu.edu](mailto:dualcredit@bsu.edu).

## **Indiana Academy Diversity Statement**

The Indiana Academy for Science, Mathematics, and Humanities is committed to being an inclusive educational community that values diversity in policy and practice. We aim to foster an educational environment where students, faculty, and staff exchange ideas freely, engage in critical thinking, and reexamine their personal perspectives. To create an environment where this respectful and productive dialogue is possible, we do not allow discrimination on the basis of race, ethnicity, sex, geographic origin, gender, gender identity, sexual orientation, disability, religion, age, or nationality. The affirmation, appreciation, and inclusion of multiple cultures ensures that all students, faculty, staff, and the wider Indiana Academy community will be able to thrive in our multicultural academic and residential environment.

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff and student body. We are committed to ensuring that all members of the community are welcome through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our Beneficence Pledge. For Bias Incident Response information or to report a bias-based incident, please click here or e-mail [reportbias@bsu.edu](mailto:reportbias@bsu.edu).

## **BSU Student Rights and Responsibilities**

While enrolled in Ball State's Dual Credit Program, you are expected to abide by the academic rules of behavior befitting a university student. You should read the Dual Credit Student and Parent Handbook, located at <https://bsu.edu/dualcredit>

In particular, review the Code of Student Rights and Responsibilities, focusing on the policies regarding student rights and responsibilities, behavior, academic integrity, and related procedures.

The Dual Credit Student and Parent Handbook includes information regarding student qualifications, prerequisites, available courses, responsibilities, financial aid stipulations, transferability, withdrawal, refund and billing policies and more. It is important that you review the information contained in it.

## **Inclusion Policy**

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff, and student body. We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our Beneficence Pledge and through university resources found at [cms.bsu.edu / campus life / multicultural center](http://cms.bsu.edu/campus-life/multicultural-center).

I truly believe in this policy, and endeavor to go above and beyond in our classroom setting. If you see any behavior that goes against the above policy (even if it's mine!), please bring it to my attention (or have someone you trust do so if you are hesitant). Alternatively, you can find the Bias-Incident form at [academy.bsu.edu/forms](http://academy.bsu.edu/forms) to report the incident directly to your DEI Coordinator.

## **Policy on the Americans with Disabilities Act (ADA)**

If you need course adaptations or accommodations because of a disability, please contact the Office of Disability Services. The Office of Disability Services coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability services can be contacted at 765-285-5293 or dsd@bsu.edu.

## **Title IX – Sexual Misconduct**

Ball State University is committed to establishing and maintaining an effective, safe, and nondiscriminatory educational environment in which all individuals are treated with respect and dignity. For information about Ball State University's Interim Title IX Policy and Procedures, please visit our website. Please note that the University's policy and procedures have undergone significant revisions starting with the 2020-21 school year and ongoing.

Consistent with the University's Notice of Nondiscrimination and in accordance with the U.S. Department of Education's implementing regulations for Title IX of the Education Amendments of 1972 ("Title IX"), Ball State University prohibits sexual harassment that occurs within its education programs and activities.

This prohibition extends to all applicants for admission or employment and to all students (any status) and all employees (any status). An individual who is found to have committed sexual harassment in violation of this policy is subject to the full range of University discipline, up to and including termination of employment or expulsion. The University will provide persons who have experienced sexual harassment with ongoing remedies as reasonably necessary to restore or preserve access to the University's education program and activities.

Inquiries concerning the specific application of Title IX at Ball State should be directed to Ms. Katie Slabaugh, Associate Dean of Students/Title IX Coordinator in the Frank A. Bracken Administration Building, room 238, 765-285-1545, kslabaugh@bsu.edu. Persons can also contact the U.S. Department of Education Office for Civil Rights, Washington, D.C. 20202-1328, 1-800-421-3481, ocr@ed.gov.

## **Student Academic Ethics Policy**

Actions which include but are not limited to cheating, plagiarism, falsely claiming to have completed work, cooperating with another person in academic dishonesty, knowingly destroying or altering another student's work, or attempting to commit an act of academic dishonesty that violates the Student Academic Ethics Policy (<http://www.bsu.edu/associateprovost/academicethics>).

The consequences of academic dishonesty are determined on a case-by-case basis by each instructor and may include but are not limited to one or more of the following academic sanctions: informal meeting, removal from dual credit course, dismissal from the university, or other appropriate consequence.

## **Academic Dishonesty Policy**

It is imperative to your continued success that you exhibit academic integrity at all times. This entails:

- never submitting another person's work as your own; this includes LLM and other AI generated information (see: LLM and other AI Fair-Use Policy, below)
- never engage in "drylabing." (artificially manufacturing lab data and submitting it as part of a lab report)
- never cheating on quizzes and/or tests.
- following all ethical standards as described in your student handbook (see "Academic Dishonesty")

**IMPORTANT:** If you feel you have been unfairly accused of failing an academic integrity standard, you have the option and right to appeal to the Indiana Academy Academic Integrity board.

Please refer to the "Academic Dishonesty" portion of your student handbook. In particular, please read the "Academic Integrity Board". Remember that you always have the right to refute any accusation (or ramification dictated by your instructor) of academic dishonesty by having your case brought before the AIB. Note that if the AIB is used, its decisions are final.

For my class specifically, academic dishonesty is defined as the following:

- never submitting another person's work as your own; this includes LLM and other AI generated information (see: LLM and other AI Fair-Use Policy, below)
- never engage in "drylabing." (artificially manufacturing lab data and submitting it as part of a lab report)
- never cheating on quizzes and/or tests.
- following all ethical standards as described in your student handbook (see "Academic Dishonesty")

## **LLM and other AI Fair-Use Policy**

Basic AI tools (spell-check, word-count, grammar, etc.) that assist with correcting errors and gathering information about your own work is not only accepted, but also encouraged!

More advanced AI tools such as LLMs (ChatGPT, LLaMa, Phi-1, etc.) that generate information or code may be used as a starting point for research or creative projects, but generated material should not (for several reasons!) be turned in as your own work. Using these LLMs can be very useful in helping you create a project and/or learn complex topics, but diligence is required to:

- **\*Completely\*** verify that all information provided by the LLM is accurate (this is a major problem, especially in the sciences!). Remember that these models pull non-vetted information from the internet, which will include non-expert, and sometimes malicious, sources.
  - You (and your grades) are responsible for any and all errors gathered in this manner.
- resist turning in LLM produced material as your own work. The point of being at the Academy is to use provided information as a Fall-board for your own intellect and creativity. Using these tools to help you gather ideas, or to find alternate ways to express your ideas, is both welcomed and encouraged. But make sure that you are not falling for temptation to use likely-erroneous data or logic that LLMs often provide. In other words, treat LLM generated material as you would other non-expert sources of material.
  - Presenting AI-generated material as your own will count as plagiarism, and will be dealt with accordingly (see Academic Dishonesty Policy, above)

## **Mask Policy**

There is currently no campus wide mask-mandate, but if the CDC declares another health-emergency, and BSU puts a mask-mandate in place, this policy may change. If and when masks are required by BSU campus, the Indiana Academy will then follow the same procedure.

## **In case of extreme COVID-19, break glass for online policy**

As it is possible that we may have to re-face pandemic conditions this year, there may be periods when some (or all) of us return to masks and/or are moved to online learning due to necessity or mandate. All of the below rules apply during e-learning, but some information may be useful:

Zoom Link: <https://bsu.zoom.us/j/7784148468>, if a password is required, please use "CptHook1".

Lectures: Classes will be provided on Canvas with the same frequency and schedule of the normal school year. It is your responsibility to view these videos w/o 24hours of their posting. It is vitally important to watch them **\*in order\***.

Homework: Homework can easily be scanned or photographed and submitted on Canvas by the due-date required.

Laboratory: Labs will be designed to be done either in a discussion format on Zoom or using simulators (PocketLabs). Any documentation (journals, reports, etc) expected can be returned to me using the same procedure as HW.

Testing: Tests will be “given” and “collected” at very specific times (TBA). Future circumstances may require different methods, but currently the procedure is as follows:

- The test will be released on Canvas at a very specific day/time that will be announced several days in advance.
- You will have a set amount of time to complete your exam (will be announced on test day, and is tied to the length of that particular test).
- Returning your test to me will be as simple as scanning or photographing your exam and emailing it back to me before the given time has expired. 504/IEP accommodations (see below) will be honored.

## **Syllabus Change Policy**

This syllabus is a guide to the course and may be subject to change with reasonable advanced notice as course needs arise.