NOTE: This schedule is subject to change.

Pathway to Space ASEN 1969

Schedule - Spring 2024

All course topics, special guests, STARS, and other assignment deadlines are below. Bring your Clicker to class each day as its use contributes directly to your grade. **All assignments are due by class unless otherwise stated. The Syllabus and assignment guidelines can be found in Canvas > Modules > Course Overview and Admin.**

Week 1

01 | Tuesday 1/16 - Chris Koehler - Course Overview

Topic

Welcome to *Pathway to Space*!

Learning Objectives

1. Overview of the course.
2. Review syllabus, schedule, expectations, and assignments.
3. Short walk-through of the course format.

STARS:	*Teams Announced - see list in Canvas (STARS Guidelines)*
Video Capsule:	*None*
Cosmos:	*Assigned - Episode #1 (due 01/23 by 11 PM)*
ePortfolio:	*Assigned - Review ePortfolio Guidelines (final ePortfolio is due 04/25 by 11 PM)*
Homework:	*Assigned - HW #1 Canvas Quiz (due 01/23)*
Book:	*Assigned - Read Preface (Quiz #1 due 01/25 by 11 PM)*
Other:	*Assigned - Bring your clicker to class on or before 1/23 at 3:30 PM*

02 | Thursday 1/18 - Valerio Ferme - Space and Wonder

Topic

Explore the inextricable connection with space and wonder to our journey to make sense of our existence and place in the cosmos.

Learning Objectives

1. Examine the connection between space and wonder through the use of stories
2. Review how imagination ties space and our journey of wonder together
3. Recognize how our journey of wonder drives human space exploration and cosmic discovery

STARS:	*None*
Video Capsule:	*DUE - Space and Wonder (~13 minutes)*
Cosmos:	*None*
ePortfolio:	*Assigned - ePortfolio Plan (due 01/30 by 11 PM)*
Homework:	*None*
Book:	*None*
Other:	*Assigned - Reflection Report #1 - Space and Me (due 02/01 by 11 PM)*

NOTE: This schedule is subject to change.

Week 2

03 | Tuesday 1/23 - Erica Ellingson - A Tour of the Cosmos

Topic

A tour of the Solar System and universe from the perspectives of size, scale and time.

Learning Objectives

1. Define the age of the universe
2. Describe different objects in the cosmos (planets, stars, the solar system, galaxies, the universe).
3. Conceptualize the size and scale of the universe with light travel time
4. Identify our cosmic address - our place in the cosmos

STARS:	*Team 1*
Video Capsule:	*DUE - A Tour of the Cosmos (~25 minutes)*
Cosmos:	*DUE - Episode #1 by 11 PM, Assigned - Episode #2 (due 01/30 by 11 PM)*
ePortfolio:	*None*
Homework:	*DUE - HW #1, Assigned - HW #2 (due 02/22 by 11 PM)*
Book:	*None*
Other:	*DUE - Bring your clicker to class on or before 1/23 at 3:30 PM*

04 | Thursday 1/25 - Kevin France - Astrophysics

Topic

A basic overview of astrophysics and the tools used, such as the Hubble Space Telescope, to understand the cosmos and our place in it.

Learning Objectives

1. Identify the difference between astrophysics and astronomy
2. Review the big picture questions astrophysics are addressing
3. Examine how astrophysicists use spectroscopy to understand the cosmos
4. Explore the many discoveries made by Hubble Space Telescope
5. Define and discuss exoplanets and what they represent

STARS:	*Team 2*
Video Capsule:	*DUE - Astrophysics (~28 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #1 by 11 PM, Assigned - The Greatest Story Ever Told (Quiz #2 due 02/01)*
Other:	*Assigned - Event Attendance (due 05/02 by 11 PM)*

NOTE: This schedule is subject to change.

Week 3

05 | Tuesday 1/30 - Paul Hayne and Carolyn Crow - Space Exploration: Going There

Topic

Discovering the cosmos through spacecraft missions that Go There, such as Apollo, New Horizons, and Juno

Learning Objectives

1. Differentiate between "going there" and "viewing there" as two ways to explore the cosmos
2. Breakdown the stages of exploration and how the skills needed for each change
3. Compare and contrast the tools used by robots and humans when visiting other bodies in the solar system
4. Discuss the advantages of visiting other places in the cosmos

STARS:	*Team 3*
Video Capsule:	*DUE - Space Exploration: Going There (~38 minutes)*
Cosmos:	*DUE - Episode #2 by 11 PM, Assigned - Episode #3 (due 02/06 by 11 PM)*
ePortfolio:	*DUE - ePortfolio Plan by 11 PM, Assigned - Resume (due 02/06 by 11 PM)*
Homework:	*None*
Book:	*None*
Other:	*None*

06 | Thursday 2/1 - Nick Schneider - Extending Science Beyond Earth: Part 1

Topic

How remote sensing techniques used to study the Earth, along with spectroscopy, are applied to our solar system and beyond.

Learning Objectives

1. Recall how remote sensing is used beyond Earth
2. Review the electromagnetic spectrum and how it is used to explore the cosmos
3. Explore how measuring infrared light can detect changes in planetary features
4. Discuss how to use other parts of the spectrum in instrumentation

STARS:	*Team 4*
Video Capsule:	*DUE - Extending Science Beyond Earth: Part 1 (~25 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #2 by 11 PM, Assigned - Earth as in the Heavens (Quiz #3 due 02/08)*
Other:	*DUE - Reflection Report 1 by 11 PM, Assigned - Reflection Report 2 - My Connections with Space (due 3/12)*

Week 4

07 | Tuesday 2/6 - Astronaut Rick Hieb - Human Exploration: Part 2

Topic

The rationale behind and challenges with human space exploration from a real astronaut's perspective.

Learning Objectives

1. Discover what it is like to be an astronaut.
2. Recognize the reasons for and challenges with human space exploration.
3. Discuss the benefits of human exploration vs. robotic exploration
4. Evaluate the next destination for human space exploration

STARS:	*Team 5*
Video Capsule:	*DUE - Human Exploration: Part 2 (~38 minutes)*
Cosmos:	*DUE - Episode #3 by 11 PM, Assigned - Episode #4 (due 02/13 by 11 PM)*
ePortfolio:	*DUE - Resume by 11 PM, Assigned - Space Minor Planning (due 02/13 by 11 PM)*
Homework:	*None*
Book:	*None*
Other:	*None*

08 | Thursday 2/8 - Dave Brain - Extending Science Beyond Earth: Part 2

Topic

Understanding Earth's climate and environment through the comparison and study of other planets in our solar system.

Learning Objectives

1. Examine the atmospheric differences between Venus, Earth, Mars
2. Explain how these atmospheres formed
3. Identify the source and loss processes responsible for atmospheric changes
4. Recognize how discoveries about other planets' features help us understand our own planet's environment.
5. Identify tools used to explore these features

STARS:	*Team 6*
Video Capsule:	*Extending Science Beyond Earth: Part 2 (~35 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #3 by 11 PM, Assigned - Let There Be Light (Quiz #4 due 02/15)*
Other:	*Assigned - Paper airplane contest due at 02/14 @ 11 PM (see Canvas Modules for details)*

Week 5

09 | Tuesday 2/13 - Kristy Tiampo - Space Exploration: Viewing There

Topic

The study of Earth's environment and other objects in the cosmos through remote sensing from space.

Learning Objectives

1. Differentiate between "going there" and "viewing there" as two ways to explore the cosmos
2. Define what is remote sensing and the two types
3. Explore the tools used to conduct remote sensing
4. Discuss what the data from remote sensing can reveal about the Earth
5. Analyze how remote sensing tools can be used to study other objects in the cosmos

STARS:	*Team 7*
Video Capsule:	*DUE - Space Exploration: Viewing There (~26 minutes)*
Cosmos:	*DUE - Episode #4 by 11 PM, Assigned - Episode #5 (due 02/20 by 11 PM)*
ePortfolio:	*DUE - Space Minor Planning by 11 PM, Assigned - Vision Statement (due 02/20)*
Homework:	*None*
Book:	*None*
Other:	*DUE - Optional Paper airplane entries at 02/14 11 PM (see Canvas Modules for details)*

10 | Thursday 2/15 - Brian Argrow and Gijs de Boer - Aeronautics

Topic

A personal perspective of aeronautics, the emergence of automation and drones, and how these technologies are expanding the capabilities of Earth-observation systems.

Learning Objectives

1. Define aeronautics and describe its connection to space
2. Understand the Greenhouse Effect
3. Define what are drones and UAVs (UAS) the ways that remote sensing methods can be enhanced by them
4. Describe the ways that aeronautic principles can be applied beyond Earth's surface

STARS:	*Team 8*
Video Capsule:	*DUE - Two Capsules - Aeronautics: Part 1 (~28 minutes) and Aeronautics: Part 2 (~23 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #4 by 11 PM, Assigned - Between the Galaxies (Quiz #5 due 02/22)*
Other:	*None*

Week 6

11 | Tuesday 2/20 - Tom Woods - Near Space

Topic

An overview of suborbital balloon, plane, and rocket technology to study the region between the reach of aeronautics vehicles and spacecraft.

Learning Objectives

1. Define near space and the layers of the atmosphere.
2. Discuss the tools used to explore near space.
3. Describe the benefits of using near space vs. orbiting satellites to explore space.

STARS:	*Team 9*
Video Capsule:	*DUE - Near Space (~19 minutes)*
Cosmos:	*DUE - Episode #5 by 11 PM, Assigned - Episode #6 (due 02/27 by 11 PM)*
ePortfolio:	*DUE - Vision Statement by 11 PM, Assigned - Sample of Work - Idea (due 02/27 by 11 PM)*
Homework:	*None*
Book:	*None*
Other:	*None*

12 | Thursday 2/22 - Penny Axelrad - The Global Positioning System

Topic

An overview of the Global Positioning System (GPS) - what it is, how it works, and the many ways we rely on it.

Learning Objectives

1. Explain what GPS is and what it does
2. Discuss the many ways GPS is used
3. Examine how GPS works
4. Explore additional ways to use GPS signals beyond location

STARS:	*Team 10*
Video Capsule:	*DUE - The Global Positioning System (~27 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*DUE - HW #2 by 11 PM, Assigned - HW #3 (due 03/14 by 11 PM)*
Book:	*DUE - Quiz #5 by 11 PM, Assigned - Dark Matter (Quiz #6 due 02/29)*
Other:	*None*

Week 7

13 | Tuesday 2/27 - Dave Murrow - Launch Vehicles

Topic

Cover the basics of launch vehicles from the types to the components to how they work and get spacecraft into space.

Learning Objectives

1. Define what a rocket is and how it works
2. Distinguish between the two primary types of launch vehicles: suborbital and orbital.
3. Identify the main components of a launch vehicle
4. Discuss the importance of the launch site and launch direction
5. Explore the new and upcoming launch vehicles

STARS:	*Team 11*
Video Capsule:	*DUE - Launch Vehicles (~17 minutes)*
Cosmos:	*DUE - Episode #6 by 11 PM, Assigned Episode #8 (due 03/05 by 11 PM)*
ePortfolio:	*DUE - Sample of Work Idea by 11 PM, Assigned - Community Service Idea (due 03/07 by 11 PM)*
Homework:	*None*
Book:	*None*
Other:	*None*

14 | Thursday 2/29 - Steve Nerem - Orbits

Topic

A basic overview of orbits, types and applications of orbits, Hohmann transfers, and gravity assists.

Learning Objectives

1. Define an orbit
2. Identify the properties that define an orbit, including time, velocity, altitude, shape, and inclination.
3. Discuss the different types of orbits and how they are used.
4. Examine how a spacecraft can change from one orbit to another.

STARS:	*Team 12*
Video Capsule:	*DUE - Orbits (~11 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #6 by 11 PM, Assigned - Dark Energy (Quiz #7 due 03/07)*
Other:	*None*

Week 8

15 | Tuesday 3/5 - Katya Arquilla - Human Exploration: Part 1

Topic

A deep dive into how space affects the human body and ways to mitigate these effects.

Learning Objectives

1. Identify the three effects of space that have the biggest impact on astronauts
2. Examine the effect of microgravity and its countermeasures
3. Examine the effect of radiation and its countermeasures
4. Examine the psychological effects of being in space and its countermeasures

STARS:	*Team 13*
Video Capsule:	*DUE - Human Exploration: Part 1 (~23 minutes)*
Cosmos:	*DUE - Episode #8 by 11 PM, Assigned Episode #11 (due 03/19 by 11 PM)*
ePortfolio:	*None*
Homework:	*None*
Book:	*None*
Other:	*None*

16 | Thursday 3/7 - Brian Hynek - The Search for Life Elsewhere

Topic

A geological discussion of whether there could be life on other planets or moons in our solar system, or on any of the planets recently discovered orbiting other stars.

Learning Objectives

1. Identify the signs and conditions required for life as we know it.
2. Understand the methods used to find evidence of life beyond Earth.
3. Evaluate any evidence of found life in space
4. Predict future destinations to explore for life

STARS:	*Team 14*
Video Capsule:	*DUE - The Search for Life Elsewhere (~25 minutes)*
Cosmos:	*None*
ePortfolio:	*DUE - Comm. Service Idea by 11 PM, Assigned - Career Services Workshop (due 03/21 by 11 PM)*
Homework:	*None*
Book:	*DUE - Quiz #7 by 11 PM, Assigned - The Cosmos on the Table (Quiz #8 due 03/14)*
Other:	*None*

Week 9

17 | Tuesday 3/12 - Chris Koehler - Mid-Semester Conversation + Tom

Topic

We'll take this class to review how the course is going through input from students.

Learning Objectives for Chris

1. Better understand the student perspective on the course format.
2. Better understand the student perspective on the course assignments.
3. Determine where and how we can improve the student experience in the course.

STARS:	*Team 15 - on any previous speaker (2 weeks advance notice required) or Chris, Ashleigh, CAs*
Video Capsule:	*DUE - Spacecraft Systems Part 1 (~42 minutes) on 03/14 at 3:30 PM*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*None*
Other:	*DUE - Reflection Report 2 by 11 PM, Assigned - Reflection Report 3 - My Connections with Space (due 05/02)*

18 | Thursday 3/14 - Chris Koehler and Guests - Spacecraft Systems

Topic

The basics of the spacecraft design process, systems engineering, and the numerous subsystems that make up a satellite.

Learning Objectives

1. Compare and contrast satellites and spacecraft and their sizes
2. Review the spacecraft design process
3. List the basic systems of a spacecraft and describe their functions
4. Understand the systems engineering role
5. Review the cost and complexity of these systems and how to test them

STARS:	*Team 16*
Video Capsule:	*DUE - Spacecraft Systems Part 1 and Part 2 (~42 minutes Part 1 and ~40 minutes Part 2)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*DUE - HW #3 by 11 PM, Assigned - HW #4 (due 04/18 by 11 PM)*
Book:	*DUE - Quiz #8 by 11 PM, Assigned - Being Round (Quiz #9 due 03/21)*
Other:	*None*

Week 10

19 | Tuesday 3/19 - Jim Stuart - Space Entrepreneurship: Starting the 2nd Space Age

Topic

An examination of entrepreneurship's role in the development of the space industry and civilian engagement in space exploration and science.

Learning Objectives

1. Define entrepreneurship
2. Evaluate the space industry before entrepreneurship
3. Examine how entrepreneurship has advanced space exploration
4. Outline the qualities of a successful space entrepreneur
5. Review today's current space entrepreneurs

STARS:	*Team 17*
Video Capsule:	*DUE - Space Entrepreneurship: Starting the 2nd Space Age (~33 minutes)*
Cosmos:	*DUE - Episode #11 by 11 PM, Assigned - Episode #12 (due 04/02 by 11 PM)*
ePortfolio:	*None*
Homework:	*None*
Book:	*None*
Other:	*None*

20 | Thursday 3/21 - Zack Donohew and Eric Alston - Space Governance

Topic

Explore the inevitable role Governance has played and will play in the exploration of space.

Learning Objectives

1. Define what is governance
2. Discuss the types of governance
3. Review analog examples where governance made a difference in a frontier
4. Identify emerging space governance issues

STARS:	*Team 18*
Video Capsule:	*DUE - Space Governance (~50 minutes)*
Cosmos:	*None*
ePortfolio:	*DUE - Career Service Workshop by 11 PM, Sample of Work (actual) due 04/09 by 11 PM*
Homework:	*None*
Book:	*DUE - Quiz #9 by 11 PM, Assigned - Invisible Light (Quiz #10 due 04/04)*
Other:	*None*

WEEK 11

SPRING BREAK - NO CLASSES

Week 12

21 | Tuesday 4/2 - Dan Baker - The Business of Space

Topic

An overview of the societal role of space, government space exploration programs, and the future of space in academia and industry.

Learning Objectives

1. Recognize the size of the space industry.
2. Identify the types of entities involved in the space industry
3. Explore what drives/motivates the space industry
4. Discuss the potential of growth in the space industry.

STARS:	*Team 19*
Video Capsule:	*DUE - The Business of Space (~30 minutes)*
Cosmos:	*DUE - Episode #12 by 11 PM, Assigned Episode #13 (due 04/09 by 11 PM)*
ePortfolio:	*None*
Homework:	*None*
Book:	*None*
Other:	*None*

22 | Thursday 4/4 - Heather Bené - The Politics of Space

Topic

An overview of how political entities enable and define space exploration and space policy through an elaborate and highly contributed to budget process.

Learning Objectives

1. Define what is politics.
2. Explain how/why governments enable space exploration.
3. Outline the basic steps required to turn budgets into funded projects.
4. Explore the politics that inform the budget process and resulting space policy
5. Understand higher education's role in the politics of space

STARS:	*Team 20*
Video Capsule:	*DUE - The Politics of Space (~30 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #10 by 11 PM, Assigned - Between the Planets (Quiz #11 due 04/11)*
Other:	*None*

Week 13

23 | Tuesday 4/9 - Erin Espelie - The Art of Space

Topic

An examination of the role of art in space and its influences on our human nature to contribute to the larger understanding of the cosmos and our place in it.

Learning Objectives

1. Recognize our human nature to understand the universe
2. Identify ways we all can contribute to the understanding of the cosmos
3. Discuss how one's art can illustrate our place in the cosmos
4. Examine how art and science are similar

STARS:	*Team 21*
Video Capsule:	*DUE - The Art of Space (~10 minutes)*
Cosmos:	*DUE - Episode #13 by 11 PM*
ePortfolio:	*DUE - Sample of Work by 11 PM (Now SUN, APR 14 at 11 PM)*
Homework:	*None*
Book:	*None*
Other:	*None*

24 | Thursday 4/11 - Jay Keister - Space and Music

Topic

An examination of the ways we use music to think about space, and space to think about music.

Learning Objectives

1. Define what music is
2. Discuss the concept of music as a method of transportation
3. Explore how music has shaped humanity's perception of space into something wonderful as opposed to fearful
4. Review examples of musical works that played a role in humanizing space

STARS:	*Team 22*
Video Capsule:	*DUE - Space and Music (~23 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*DUE - HW #4 by 11 PM*
Book:	*DUE - Quiz #11 by 11 PM, Assigned - Exoplanet Earth (Quiz #12 due 04/18)*
Other:	*None*

Week 14

25 | Tuesday 4/16 - Paul Daugherty - The Journalism of Space

Topic

Explore the tools of an effective science journalist and discover how their reporting on science influences the politics, policy, and public perception of space.

Learning Objectives

1. Differentiate between science reporting and reporting on other subject areas
2. Examine the tools and methods of effective science journalists
3. Define and understand the concept of false balance in journalism
4. Review examples of those who influenced politics, policy, and the public perception of space

STARS:	*Team 23*
Video Capsule:	*DUE - The Journalism of Space (~27 minutes)*
Cosmos:	*None*
ePortfolio:	*DUE - Community Service Reaction & Photo by 11 PM (Now MON, APR 22 at 11 PM)* *Reminder - Final ePortfolio due next week (4/5)*
Homework:	*None*
Book:	*None*
Other:	*None*

26 | Thursday 4/18 - Ernesto Acevedo-Muñoz - Space In Movies

Topic

An overview of how movies transport our minds and alter our perceptions of space

Learning Objectives

1. Explore the early history of movies and radio that made space as accessible
2. Examine the juncture of pop culture and the real world displayed in movies
3. Identify the movies that played significant roles in shaping humanity's perception of space
4. Discuss why some space movies are better than others and remain relevant

STARS:	*Team 24*
Video Capsule:	*DUE - Space In Movies (~34 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #12 by 11 PM, Assigned - Reflections on the Cosmic Perspective (Quiz #13 due 04/30)*
Other:	*None*

XX | Saturday 4/20 - 8th Annual Moonwalk Dance

RSVP Here at https://tinyurl.com/moonwalk2024

Week 15

27 | Tuesday 4/23 - Scott Millspaugh - Space Through the Ages

Topic

A look at the role art and science fiction play in shaping and creating new realities and understandings of our world and the cosmos.

Learning Objectives

1. Examine why science and science fiction are similar
2. Discuss how an idea becomes real
3. Explore how art and science are both generative
4. Discover the importance of struggle in finding one's path

STARS:	*Team 25*
Video Capsule:	*DUE - Science Fiction (~30 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*None*
Other:	*None*

28 | Thursday 4/25 - William Kuskin - Science Fiction

Topic

A look at the role art and science fiction play in shaping and creating new realities and understandings of our world and the cosmos.

Learning Objectives

1. Examine why science and science fiction are similar
2. Discuss how an idea becomes real
3. Explore how art and science are both generative
4. Discover the importance of struggle in finding one's path

STARS:	*Team 26*
Video Capsule:	*DUE - Science Fiction (~30 minutes)*
Cosmos:	*None*
ePortfolio:	*DUE - Final ePortfolio by 11 PM (Now MON, APR 29 at 4:20 PM)*
Homework:	*None*
Book:	*None*
Other:	*None*

NOTE: This schedule is subject to change.

Week 16

29 | Tuesday 4/30 - Chris Koehler - One Pathway to Space

Topic

A real life example of how one book influenced three individuals and forever changed humans from cave dwellers to star explorers.

Learning Objectives

1. Explain how "From the Earth to the Moon" shaped modern rocketry.
2. List the founding fathers of modern rocketry and describe how they found their pathways to space.
3. Understand how their work paved the way for our world of space today.

STARS:	*Team 27*
Video Capsule:	*DUE - One Pathway to Space (~31 minutes)*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*DUE - Quiz #13 by 11 PM*
Other:	*None*

30 | Thursday 5/2 - Last Class

Topic

A review of the course and our progress this semester to hear what worked and what didn't as well as a discussion about the final exam with answers given!

Learning Objectives

1. Did the course meet your expectations?
2. Did you find your path?
3. Gain a better understanding of the final exam format and how to prepare.

STARS:	*Team 28 on any previous speaker (2 weeks advance notice required) or Chris, Ashleigh, CAs*
Video Capsule:	*None*
Cosmos:	*None*
ePortfolio:	*None*
Homework:	*None*
Book:	*None*
Other:	*DUE - Event Attendance x 2 and Reflection Report 3 by 11 PM*

Final Exam

Monday, May 6th 1:30 - 4 PM - Location @ TBD

The final exam for ASEN 1969 is multiple choice and covers content covered in class, the Video Capsules, the Book, the Homework, and the Cosmos assignments. It shall be…