

2011 BSSP Astronomy Summer Institute
PHYSX 591-50 Inquiry-Based Astronomy for Teachers
Syllabus and Schedule Day by Day
Instructor: Irene Grimberg

Day	Content Topics
Day 1	Moon phases
Monday	Eclipses
	Constellations
Day 2	Assessing Inquiry Workshop
Tuesday	Exploring the solar system: Methods and rationales
	Comparative planetology: The habitability of planets and moons
Day 3	The ISM and planetary formation
Wednesday	The luminosity-distance relationship
	Measuring distances in the universe: Parallax, the distance modulus, and standard candles
Day 4	Understanding stellar spectra
Thursday	The importance of mass in the lives of stars
	The H-R Diagram
	Stellar evolution: formation, life, and death
Day 5	Evolution of the universe through time and space
Friday	Cosmological perspectives and models

Day 1, Monday June 6: Our Sky

7:30-8:00 am Breakfast

8:00-10:15

1. Welcome
2. Prayer and words by Joe Medicine Crow
3. Astronomy and Weather and Climate Pre-test
4. Presentation: Overview of the Institute and Night Sky

10:15-10:30 Break

10:30 - 12:15 pm.

1. Hands-On activity: Moon phases and eclipses
2. Online activity (SciObject): Exploring Moon's Motions
3. Hands-On activity: Moon Orbits

12:15-12:45 Lunch

12:45 -2:30

1. Classroom Application: Moon phases' observations and predictions
2. Online activity: Eclipses in the year I was born.

Go to <http://www.eclipse.org.uk/eclbin/query.cgi>

Search the year that you born, how many eclipses it happened? What type of eclipse?
Look at a solar and a lunar eclipses maps of your year, areas of visibility, duration, etc...
was an eclipse visible the year and place where you born?

3. Presentation on eclipses
4. Storytelling in the classroom

2:30-2:40: Break

2:40-4:00

1. Crow Indian Constellations by Timothy McCleary
2. Classroom Application: Star Wheels Exploration
3. Reflections on today's learning: formative assessment

Day 2, Tuesday June 7: Solar System

7:30-8:00 am Breakfast

8:00-Noon

Assessing Inquiry Workshop

12:00-12:45 pm Lunch-OPI Presentation: PD opportunities in Montana

12:45-2:45

1. Review of previous day learning
2. Online activity: Adopt a planet
3. Hands-on activity: Planets orbital velocity and radius
4. Hands-on activity: Planets orbits and periods

2:45-3:00 Break

3:00 - 4:00

1. Online activity: Create a solar system
<http://www.alienearths.org/online/starandplanetformation/planetfamilies.php> .
2. Hands-on activity: Asteroids and craters.
3. Reflections on today's learning: formative assessment

Day 3, Wednesday June 8: Planetary formation and Interstellar Media (ISM)

7:30-8:00 am Breakfast

8:00-10:45

1. Review of previous day learning
2. SPOT Presentation: Our Solar system
3. For your classroom online activity: Extra solar planets. Go to the link below, choose Simulations then choose 3D World Atlas
http://planetquest.jpl.nasa.gov/gallery/gallery_index.cfm
4. Presentation on Methods for Detection of Planets
5. Hands-on activity: Planetary Transit
6. Online activity. Choose between two options:
 - a) Planetary transit. Go to the link below, choose Simulations then choose Transit Simulator
http://planetquest.jpl.nasa.gov/gallery/gallery_index.cfm
 - b) Planet detections using micro-lenses. Podcast. Go to the link:
http://www.windows2universe.org/olpa/podcasts/systematic_search.mp3

10:45-11:00 Break

11:00-12:30 pm

1. Online activity: About the Boundary of the Solar System using the information in
http://ibex.swri.edu/students/What_defines_the_boundary.shtml
2. Presentation on The Origin of the Solar System.
3. Hands-on activity: Luminosity

2:30-1:00 Lunch

1:00-2:45

1. Presentation: Luminosity, brightness and parallax
2. Hands-on activity: Parallax
3. Online activity: go to the following link, watch the video clip with your group and formulate two questions that you could use with your students to evaluate their understanding
<http://www.youtube.com/watch?v=jjmjEDYqbCk&feature=related>

2:45-3:00: Break

3:00-4:00

1. Hands-on activity: Lights' Diffraction gratings
2. Reflections on today's learning: formative assessment

Day 4

7:30-8:00 am.: Breakfast

8:00-10:30 am:

1. Review of previous day learning

2. Presentation: Light and Stellar spectra
3. Hands-on activity: Beyond the red, infrared radiation

10:30-4:30 pm: Medicine Wheel Field Trip

Day 5

7:30-8:00 am: Breakfast

8:00-10:30 am.

1. Review: of previous day learning
2. Hands-on activity: The stars
3. Movie: Solar Dynamics Observatory

10:30-10:45: Break

10:45-12:15

1. Hands-on activity: Expanding Universe
2. Presentation: The Universe

12:15-12:45 pm: Lunch

12:45-3:00

2. Online activity: Galaxies

Go to <http://www.galaxyzoo.org/science>. Working with your partner: 1) complete the classification sample in the "How to take part" section. 2) Go to <http://www.galaxyzoo.org/cosmology>, choose one cosmology topic to explore and share with the rest of the class.

3. Movie: Cosmic Collisions

3:00-3:45

1. Reflections on today's learning: formative assessment
2. Hugs and Farewell.