

Introductory Astronomy PHYS 110 Course Outcome Guide (COG)

Course:	PHYS 110 Introductory Astronomy Lab	Credits:	1	Date updated	April 2016
Course Description:	This is an introductory astronomy contended to give the student an appreciation of the universe in which we live. Topics covered will include: ancient astronomy (Greek & Native Americans), and the Copernican Revolution; astronomical measurements and instruments, the solar system, stars and stellar evolution, galaxies, black holes, Big Bang cosmology. Co-requisite PHYS 110L Introductory Astronomy Lab				
Concepts and Issues	Process Skills	Assessment Tasks	Intended Outcomes		
			Course	General Education or Program	Institutional
1. History of Astronomy and Archeoastronomy. 2. Constellations 3. The moon 4. Newton and Gravity 5. Einstein 6. Telescopes 7. Properties of the Sun 8. Atoms and starlight	Study effectively Use scientific instruments safely and appropriately including telescopes and spectrometers. Be able to solve problems on scientific notation, scientific method, the metric system and temperature conversion. Describe the contributions of ancient cultures including Mesopotamia, Babylon, Mayan, various Native American Tribes, Greek, Arab	1. Complete assignments of readings and worksheets, lab worksheets (“portfolio”), student presentations, study guides, movies and worksheets. 2. IPAD activities and computer activities 3. Lecture and lab quizzes. 4. Lecture and lab exams with objective and subjective questions. 5. Lab attendance and participation.	1. Demonstrate the safe appropriate use of scientific instruments such as telescopes and spectrographs. 2. Differentiate factual information from opinion and pseudo-science by practicing methods used by scientists 3. Practice the application of astronomical information to solve problems and in life (personal and professional).	1. Students will use reasoning skills to analyze and solve problems. 2. Students will demonstrate knowledge of diverse cultures and value systems.	1. Students will use reasoning skills to analyze and solve problems. 2. Students will demonstrate knowledge of diverse cultures and value systems.

<p>9. The life and death of stars. Stellar evolution</p> <p>10. Interstellar medium</p> <p>11. Galaxies</p> <p>12. Cosmology</p> <p>13. The Solar System and the characteristics of the members</p> <p>14. Detection of extrasolar planets</p> <p>15. Astrobiology</p>	<p>Compare and contrast different types of telescopes.</p> <p>Demonstrate the correct use of a planisphere.</p> <p>Be able to recognize, identify and locate major constellations and asterisms in the planetarium and sky. Name the major bright stars and list constellations they are found in.</p> <p>Describe and explain common celestial motions. Describe parallax and explain how and for what it is used.</p> <p>Be able to solve problems of magnitude, gravitational force, acceleration, energy release, orbital period, area and circumference, latitude calculations, intrinsic and apparent brightness.</p> <p>Label celestial sphere diagrams. Apply the</p>		<p>4. Practice the application of astronomical information in upper level classes.</p>		
--	---	--	--	--	--

	<p>celestial coordinate to locate objects in the sky. Label moon phase diagrams.</p> <p>Describe the contributions of the well known figures in Astronomy.</p> <p>Explain how tides are formed, behave, are influenced and affect the moon.</p> <p>Describe eclipses, when and how they occur.</p> <p>Describe the structure, stellar processes and function of the Sun.</p> <p>Describe H-R diagrams and explain what they are used for.</p> <p>Describe our galaxy and compare and contrast it to other galaxies. Explain where our solar system is located in the spiral arm and what the implications are.</p> <p>Describe the components and birth of</p>				
--	--	--	--	--	--

	<p>a galaxy, interstellar medium and birth and death of stars.</p> <p>Describe the solar system model.</p> <p>List the main characteristics of each main member of the solar system and compare and contrast them to each other and Earth.</p> <p>Compare and contrast asteroids, meteorites and comets</p> <p>Know Atomic structure, bonding, Molecular Structure and how this leads to chemical properties.</p> <p>Explain the cosmological models.</p> <p>Describe and compare and contrast Dark Matter and Dark Energy. Explain the implications of each.</p> <p>Discuss the discovery of new exoplanets including the methods</p>				
--	--	--	--	--	--

	<p>used for detection.</p> <p>Know the role of biological molecules in living organisms. Integrate the process of evolution in the development and adaptation of living organisms. Describe how astrobiological life could possibly be identified.</p>				
--	--	--	--	--	--