

DIVISION 1
Institutional (ILO), Program (PLO), and Course (SLO) Alignment

Program: Astronomy & Physics	Number of Courses: 10	Date Updated: 10.23.2015	Submitted by: K. Radcliff, ext. 2212 K. Schwitkis, ext. 2428
---	---------------------------------	------------------------------------	---

ILOs	1. Critical Thinking <i>Students apply critical, creative and analytical skills to identify and solve problems, analyze information, synthesize and evaluate ideas, and transform existing ideas into new forms.</i>	2. Communication <i>Students effectively communicate with and respond to varied audiences in written, spoken or signed, and artistic forms.</i>	3. Community and Personal Development <i>Students are productive and engaged members of society, demonstrating personal responsibility, and community and social awareness through their engagement in campus programs and services.</i>	4. Information Literacy <i>Students determine an information need and use various media and formats to develop a research strategy and locate, evaluate, document, and use information to accomplish a specific purpose. Students demonstrate an understanding of the legal, social, and ethical aspects related to information use.</i>
-------------	--	---	--	--

SLO-PLO-ILO ALIGNMENT NOTES:

Mark boxes with an 'X' if: SLO/PLO is a major focus or an important part of the course/program; direct instruction or some direct instruction is provided; students are evaluated multiple times (and possibly in various ways) throughout the course or are evaluated on the concepts once or twice within the course.

DO NOT mark with an 'X' if: SLO/PLO is a minor focus of the course/program and some instruction is given in the area but students are not formally evaluated on the concepts; or if the SLO/PLO is minimally or not at all part of the course/program.

PLOs	PLO to ILO Alignment			
	<i>(Mark with an X)</i>			
	1	2	3	4
PLO #1 Applying Relevant Principles Students will trace the development of a scientific idea from gathering of data through development of a hypothesis to testing a prediction.	X			
PLO #2 Solving Physics Problems Students will make scientific measurements and demonstrate the difference between disagreement and error.	X			
PLO #3 Data Collection & Analysis Students will read a simple graph or diagram and interpret the results appropriately.	X	X		

SLOs	SLO to PLO Alignment <i>(Mark with an X)</i>			COURSE to ILO Alignment <i>(Mark with an X)</i>			
	P1	P2	P3	1	2	3	4
ASTR 12 Astronomy Laboratory: SLO #1 Scientific Method Students will be able to apply the Scientific Method to the solution of astronomical problems.	X	X	X	X			
ASTR 12 Astronomy Laboratory: SLO #2 Locating Celestial Objects Using a Cassegrain reflecting telescope, students will be able to align the telescope and point it at several objects, including the Moon, planets visible to the naked eye, planets invisible to the naked eye, bright stars, faint stars, and diffuse objects (clusters, nebulae, and galaxies).	X	X	X	X			
ASTR 20 The Solar System: SLO #1 Scientific Method Students will be able to recognize the elements of the Scientific Method in the discussion of a scientific problem.	X	X		X			
ASTR 20 The Solar System: SLO #2 Seasons Students will be able to explain the causes of seasonal variations in the length of the day, direction of sunrise and sunset, and the amount of solar heating on the Earth.	X	X					
ASTR 20 The Solar System: SLO #3 Planet Origins Students will be able to describe the modern theory of the origin of the planets and discuss the evidence that supports the theory.	X	X					
ASTR 25 Stars and Galaxies: SLO #1 Scientific Method Students will be able to recognize the elements of the Scientific Method in the discussion of a scientific problem.	X	X		X			
ASTR 25 Stars and Galaxies: SLO #2 Radiation Students will explain how electromagnetic radiation and astronomical instruments are used to reveal the properties of stars and planets.	X	X					
ASTR 25 Stars and Galaxies: SLO #3 Universe Origin Students will be able to describe the modern theory of the origin of the universe (the Big Bang Theory) and discuss the evidence that supports the theory.	X	X					
PHYS 11 Descriptive Introduction to Physics: SLO #1 Applying Relevant Principles Given a description of a physical situation (floating ice cube, falling body,...) the student should be able to recognize the basic physical principles involved in order to correctly answer conceptual questions.	X			X			
PHYS 12 Laboratory for Introductory Physics: SLO #1 Data Collection & Analysis Students can read and record, with appropriate units and uncertainties, measurements taken from a ruler a vernier and a protractor. Students can interpret and analyze that data, including error analysis.	X		X	X	X		

SLOs	SLO to PLO Alignment <i>(Mark with an X)</i>			COURSE to ILO Alignment <i>(Mark with an X)</i>			
	P1	P2	P3	1	2	3	4
PHYS 1A Mechanics of Solids: SLO #1 Applying Relevant Principles Students can recognize the basic physical principles which are relevant in a given physical situation involving mechanics in order to correctly answer conceptual questions.	X			X			
PHYS 1A Mechanics of Solids: SLO #2 Solving Physics Problems Students can identify and apply the relevant laws of physics along with the necessary mathematics to successfully solve a mechanics problem.		X					
PHYS 1A Mechanics of Solids: SLO #3 Data Collection & Analysis Students can read and record, with appropriate units and uncertainties, measurements taken from a Vernier caliper and a micrometer caliper. Students can interpret and analyze the collected data, including error analysis.			X				
PHYS 1B Fluids, Heat and Sound: SLO #1 Applying Relevant Principles Students can recognize the basic physical principles which are relevant in a given physical situation involving heat, fluids or sound in order to correctly answer conceptual questions.	X			X			
PHYS 1B Fluids, Heat and Sound: SLO #2 Solving Physics Problems Students can identify and apply the laws of physics along with the necessary mathematics to successfully solve a problem dealing with heat, fluids or sound.		X					
PHYS 1B Fluids, Heat and Sound: SLO #3 Data Collection & Analysis Students can read and record, with appropriate units and uncertainties, measurements taken from an instrument used to measure temperatures, densities or pressures. Students can interpret and analyze that data, including error analysis.			X				
PHYS 1C Electricity and Magnetism: SLO #1 Applying Relevant Principles Students can recognize the basic physical principles which are relevant in a given physical situation involving electricity, magnetism or electromagnetism in order to correctly answer conceptual questions.	X			X			
PHYS 1C Electricity and Magnetism: SLO #2 Solving Physics Problems Students can identify and apply the relevant laws of physics along with the necessary mathematics to successfully solve a problem dealing with electricity, magnetism or electromagnetism.		X					
PHYS 1C Electricity and Magnetism: SLO #3 Data Collection & Analysis Students can read and record, with appropriate units and uncertainties, measurements taken from a multimeter and a voltmeter. Students can interpret and analyze that data, including error analysis.			X				

SLOs	SLO to PLO Alignment <i>(Mark with an X)</i>			COURSE to ILO Alignment <i>(Mark with an X)</i>			
	P1	P2	P3	1	2	3	4
PHYS 1D Optics and Modern Physics: SLO #1 Applying Relevant Principles Students can recognize the basic physical principles which are relevant in a given physical situation involving electricity, magnetism or electromagnetism in order to correctly answer conceptual questions.	X			X			
PHYS 1D Optics and Modern Physics: SLO #2 Solving Physics Problems Students can identify and apply the relevant laws of physics along with the necessary mathematics to successfully solve a problem dealing with electricity, magnetism or electromagnetism.		X					
PHYS 1D Optics and Modern Physics: SLO #3 Data Collection & Analysis Students can read and record, with appropriate units and uncertainties, measurements taken from a multimeter and a voltmeter. Students can interpret and analyze that data, including error analysis.			X				
PHYS 2A General Physics: SLO #1 Applying Relevant Principles Students can identify the physical principles which are relevant in a given physical situation involving mechanics, heat, fluids or sound in order to correctly answer conceptual questions.	X			X			
PHYS 2A General Physics: SLO #2 Solving Physics Problems Students can identify and apply the relevant laws of physics along with the necessary mathematics to successfully solve a mechanics problem.		X					
PHYS 2A General Physics: SLO #3 Data Collection & Analysis Students demonstrate ability to correctly read and record, with appropriate units and uncertainties, measurements taken from a vernier caliper and a micrometer caliper. Students can interpret and analyze the collected data, including error analysis.			X				
PHYS 2B General Physics: SLO #1 Applying Relevant Principles Students can identify the physical principles which are relevant in a given physical situation involving electricity, magnetism, electromagnetism, optics or modern physics in order to correctly answer conceptual questions.	X			X			
PHYS 2B General Physics: SLO #2 Solving Physics Problems Students can identify and apply the relevant laws of physics along with the necessary mathematics to successfully solve a problem dealing with electricity, magnetism, electromagnetism, optics or modern physics.		X					
PHYS 2B General Physics: SLO #3 Data Collection & Analysis Students can read and record, with appropriate units and uncertainties, measurements taken from a multimeter. Students can interpret and analyze that data, including error analysis.			X				