

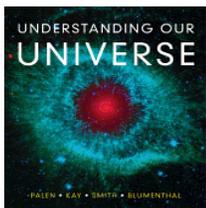
Phys90: *Introduction to Astronomy* Spring 2013 Syllabus

Lecture: TTh 8:00-9:30am, Room Gal-201, Galileo Hall
Laboratory: M 1:00pm-3:00pm, 3:00pm-5:00pm, 6:00pm-8:00pm Gal-205 or Campus Observatory Pad
Campus Observatory: TBA

Instructor: [Prof. Ron Olowin](#)

(Office: Gal-103b, Galileo Hall; Voice: 925.631.4428;
e-mail: rpolowin@stmarys-ca.edu)

**Text Book: Understanding Our Universe w/ Smart
Workbook**



by **Stacy Palen, et al.**

Important Links: [Special Criteria Course of Study Pertinent Information](#)

Special Criteria

Reasonable and appropriate accommodations, that take into account the

context of the course and its essential elements, for individuals with qualifying disabilities, are extended through the office of Student Disability Services. Students with disabilities are encouraged to contact the Student Disability Services Coordinator at (925) 631-4164 to set up a confidential appointment to discuss accommodation guidelines and available services. Additional information regarding the services available may be found at the following address on the Saint Mary's website: [Student Disabilities Services](#)

Course of Study

Astronomy is as creative an enterprise as any of the arts and humanities. It flows from the realm of human consciousness that wants to know, and that includes knowing about the Universe of which we are an intimate part.

How we know what we know is as important as what we know, and astronomy as much as any other science reveals the interplay between our collective observations of the world and the imagination of the human mind to conceptualize its nature. In this course, we shall present the diverse facts that form the context of a science and at the same time do justice to the unifying concepts that draw these facts together into a consistent picture, interweaving sufficient concepts with facts to provide the essence of contemporary astronomical thought. If, long after the factual content is forgotten, you retain some awe from having experienced the great intellectual quest that is astronomy, you are fortunate; otherwise, you haven't been paying attention!

The course is designed in such a way as to have three one-hour lectures and one two-hour laboratory session per week, with the laboratory work complementing the lecture material. The laboratory will meet at irregular hours, early morning, afternoon and evening, to accommodate outdoor observing sessions at the Campus Observatory, practical experimentation in the Physics laboratory, as well as field trips to local planetaria and observatories.

Science Outcomes for PHYSI-090, Introduction to Astronomy:

By "Science" we intend for you as students to be able to understand the way of knowing constitutive of the natural and physical sciences, rather than one of the many other disciplines that uses the term "science" (e.g., the social sciences). The areas of the "natural and physical world" that it may address should be understood broadly (e.g., astronomy, physics, chemistry, biology, neuroscience, anatomy). We use the phrase "laboratory or field setting" in order to make it clear that "lab" should be understood in the broadest possible way. Finally we intend that you as students have demonstrated some understanding of one or more of the social and/or ethical issues that occur within or result from developments in modern science.

Student Learning Outcomes:

• Demonstrate an understanding of scientific concepts, principles, and theories that explain the natural and physical world:

- Apply the scientific method to understand motions in the heavens, from a geocentric and heliocentric point of view;
- Identify the physical nature of planets stars and galaxies;
- Use the Atomic Theory and Theory of Electromagnetism to understand the phenomena of stars and stellar systems
- Apply the scientific method to a selected group of topics in astronomy, e.g. motions in the heavens, the physics of planets stars and galaxies.

• Collect, analyze, and interpret empirical data gathered in a laboratory or field setting:

- Collect, report and analyze data obtained in a laboratory and/or observatory setting in a manner exhibiting organization, proper documentation and critical thinking (e.g. "Current Events" and "Long-Term Homework" Assignments.)
- Identify environmental factors, which affect the outcome of an experiment or observation and apply basic error analyses techniques.
- Perform visual observations and use proper astronomical vocabulary and terminology.
- Demonstrate a basic understanding of the use of standard astronomical instruments.
- Demonstrate a working knowledge of computer on-line and Internet astronomical programs.
- Use "Current Events" as a means to demonstrate a working knowledge of contemporary astronomical

events and influences.

• Examine social or ethical issues that arise in the process of scientific inquiry or out of scientific or technological developments:

- Demonstrate a knowledge of the cultural impact of the simultaneous Cosmic, Biological and Informational Revolutions.
- Demonstrate a knowledge of the impact of Cosmology, the discovery of our "Sense of Place" in the Universe.
- Demonstrate a knowledge of the impact of AstroBiology, the discovery of extraterrestrial life and intelligence and its impact on human culture.
- Demonstrate a knowledge of Technological Evolution (e.g. the development of synthetic life and artificial intelligence) and its impact on humankind.
- Demonstrate a knowledge of our planet's Ecosystem, Climate Change, Global Warming and its impact on human culture.

Follow this link to learn about [Consultation and Office Hours.](#)

[Check your grades!](#)



Follow this link to learn about our [Examination and Grading Policies.](#)

Lecture Schedule

Day	Lecture Topic	Reading Sections	C E
TUE	Grand Tour of the Universe	Chapter 1: Our Place in the Universe	
THU	The Copernican Revolution	Chapter 2: Patterns in the Sky-Motions of Earth	CE#1
TUE	The Solar System	Chapter 5: The Formation of Stellar Systems	
THU	Planetary Structures	Chapter 7: Atmospheres of Venus, Earth, and Mars	CE#2
TUE	Terrestrial Planets	Chapter 6: Terrestrial Worlds in the Inner Solar System	
THU	Jovian Planets	Chapter 8: The Giant Planets	CE#3
TUE	Minor Planets, Comets, Meteoroids	Chapter 9: Small Bodies of the Solar System	
THU	EXAM 1		CE#4
TUE	The Sun As a Star	Chapter 11: Our Star: The Sun	
THU	Physics of Stars	Chapter 10: Measuring the Stars	CE#5
TUE	Variable Stars		
THU	The Interstellar Medium		CE#6
-	<i>EASTER RECESS</i>		
TUE	Stellar Evolution	Chapter 12: Evolution of Low-Mass Stars	
THU	Stellar Evolution	Chapter 13: Evolution of High-Mass Stars	CE#7
TUE	Neutron Stars & Black Holes		
THU	EXAM 2		CE# 8
TUE	The Milky Way Galaxy	Chapter 16: Our Galaxy: The Milky Way	
THU	Hubble's Law & Dark Matter	Chapter 15: The Realm of the Galaxies	CE# 9
TUE	Large-Scale Structure of the Cosmos	Chapter 17: Origin of Structure	
THU	Cosmology	Chapter 17: Modern Cosmology	CE# 10
TUE	The Big Bang & Fate of the Universe		
THU	EXAM 3		CE# 11
TUE	AstroBiology	Chapter 18: Life in the Universe	
THU	Space Exploration & Colonization	Notes	CE# 12
TUE	TransHuman & PostHuman Futures	Notes	
THU	Things to Come	Notes	CE# 13
TUE	FINAL EXAM	Gal-201: 9-11 am	LTH,EC



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