

### Basic Course Information

Semester	<b>Fall 2015</b>	Instructor's Name	<b>Russell J. Lavery</b>
Course Title & Number	<b>Astronomy 100</b>	Instructor's Email	<b>Russell.Lavery@imperial.edu</b>
CRN #	<b>10020</b>	Webpage	<b><a href="http://spaces.imperial.edu/russell.lavery/ASTR100/front100.html">http://spaces.imperial.edu/russell.lavery/ASTR100/front100.html</a></b>
Room	<b>2727</b>	Office	<b>2777</b>
Class Dates	<b>August 17 to December 11</b>	Office Hours	<b>Monday: 12:50 to 1:50 PM Tuesday: 11:30 AM to 12:30 PM Wednesday: 12:50 to 1:50 PM Thursday: 11:30 AM to 12:30 PM</b>
Class Days	<b>Monday - Wednesday</b>	Office Phone #	<b>760-355-6202</b>
Class Times	<b>11:20 AM – 12:45 PM</b>	Who students should contact if emergency or other absence	Ofelia Duarte : (760) 355-6155
Units	<b>3 units</b>		Silvia Murray: (760) 355-6201

### Course Description

An introduction to the principles of astronomy, including physical evolution, tools of the astronomer, the sky, the solar system, the stars, the galaxies and the universe. (CSU, UC)

### Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. comprehend the workings of the seasons around the Earth and their intrinsic cause. (ILO2, ILO5)
2. determine the phases of the Moon based on its location with respect to the Earth and the Sun. (ILO2)
3. conceptualize, both in physical size and in time of formation, the differences between the Solar System and the Universe. (ILO2)

### Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Demonstrate knowledge of the periodic motions of objects on the celestial sphere and their observable effects.
2. Demonstrate knowledge that astronomers locate objects in the sky through the use of a celestial coordinate system.
3. Demonstrate knowledge of the history and theories of Astronomy. The student will differentiate between the ideas of Brahe, Kepler, Galileo, Newton, and others.
4. Discuss the Sun as the center of our solar system, the scale of our solar system, and the origin of the solar system.

5. Describe the similarities and differences between the terrestrial and jovian planets, both as categories of planets and on an individual basis.
6. Describe the physical evolution of stars: their process of formation, their main-sequence lifetimes and means of energy production, and their final evolutionary processes which lead to the various types of stellar remnants.
7. Describe the basic components of the Milky Way galaxy and demonstrate knowledge of the different types of galaxies, to understand that galaxies are fundamental units of the universe, and the origins of galaxies.
8. Discuss the scientific theory for the physical evolution of the Universe, from its beginning in what is known as the "Big Bang" through to its ultimate fate of being "open" or "closed".

### Textbooks & Other Resources or Links

*Pathways to Astronomy*, by Stephen Schneider & Thomas Arny. (4<sup>th</sup> ed.) ISBN: 987-0-07-351224-2

### Course Requirements and Instructional Methods

**Instructional Methodology:** Audio Visual, Demonstration, Discussion, Group Activity, Lecture, Individual Assistance, Computer Assisted Instruction.

#### Assignments:

##### Reading and Writing:

1. Two written short essays (1-2 pages in length), one involving the description of several astronomical images selected by the student and the second being a summary of the mechanisms for the production of elements, besides hydrogen and helium, in the Universe. 2. In-class peer learning activities (3-4 pages in length) completed by the students working together with only modest instructor involvement

##### Out-of-class:

1. Assigned reading in textbook (10 to 30 pages per week), supplemental handouts and on-line course notes. 2. Assignments involving mathematical relations covering , but not limited to the following: the changing altitude of the Sun (seasons); applications of Kepler's Laws of Planetary Motion; radio-isotopic dating (for the determination of the age of the Earth and Solar System); relationships involving temperature, wavelength and energy of photons of light; applications of the mass-luminosity relation for stars determining the lifetimes of different mass stars. 3. Conceptual assignments involving the rising and setting times of various lunar phases, physical size of the Milky Way galaxy, and the expansion properties of the Universe.

Out of Class Assignments: The Department of Education policy states that one (1) credit hour is the amount of student work that reasonably approximates not less than one hour of class time and two (2) hours of out-of-class time per week over the span of a semester. WASC has adopted a similar requirement.

### Course Grading Based on Course Objectives

<b>Course Grading:</b>	<b>3 Mid-term Exams (15% each exam)</b>	<b>45% of final grade</b>
	<b>Final Exam</b>	<b>20% of final grade</b>
	<b>4 Homework Exercises</b>	<b>25% of final grade</b>
	<b>2 Written Assignments (5% each)</b>	<b>10% of final grade</b>
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	<b>TOTAL</b>	<b>100%</b>

### Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

### Classroom Etiquette

- Electronic Devices: Cell phones should be turned off. If your cell phone goes off during an exam, you will be done with the exam and hand it in. So, turn it off!
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the General Catalog.
- Children in the classroom: Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

### Academic Honesty

#### Required Language

- Plagiarism is to take and present as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to correctly 'cite a source', you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment or using or attempting to use materials, or assisting others in using materials, or assisting others in using materials, which are prohibited or inappropriate in the context of the academic assignment in question.

Anyone caught cheating or will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment ;(c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment, (e) use of a commercial term paper service

### Additional Help – Discretionary Section and Language

- Blackboard support center: <http://bbcrm.edusupportcenter.com/ics/support/default.asp?deptID=8543>
- Learning Labs: There are several ‘labs’ on campus to assist you through the use of computers, tutors, or a combination. Please consult your college map for the Math Lab, Reading & Writing Lab, and Learning Services (library). Please speak to the instructor about labs unique to your specific program
- Library Services: There is more to our library than just books. You have access to tutors in the learning center, study rooms for small groups, and online access to a wealth of resources.

### Disabled Student Programs and Services (DSPS)

**Required Language:** Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. If you feel you need to be evaluated for educational accommodations, the DSP&S office is located in Building 2100, telephone 760-355-6313.

### Student Counseling and Health Services

**Required Language:** Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see <http://www.imperial.edu/students/student-health-center/>. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310.

### Student Rights and Responsibilities

**Required Language:** Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities please refer to the IVC General Catalog available online at [http://www.imperial.edu/index.php?option=com\\_docman&task=doc\\_download&gid=4516&Itemid=762](http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762)

### Information Literacy

**Required Language:** Imperial Valley College is dedicated to help students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at <http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/>

**Anticipated Class Schedule / Calendar**

DATE	SUBJECT	READINGS
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Aug 17 M	Introduction	
19 W	Earth and Sky Coordinates	Unit 5
	Annual Motion of the Sun	Units 6, 7, and 9
24 M	The Reason for Seasons	Units 6, 7, and 9
26 W	Phases of the Moon	Unit 8
	Solar and Lunar Eclipses	Unit 8
31 M	Early Astronomy	Unit 10
Sept 2 W	Astronomical Revolution I	Unit 11
7 M	<i>Holiday</i>	
9 W	Astronomical Revolution II	Unit 12
14 M	Solar System Overview	Units 32 and 33
<b>16 W</b>	<b>First Mid-Term Exam</b>	
	Planetarium EC	
21 M	The Earth in Detail	Unit 35
23 W	The Moon in Detail	Unit 37
28 M	The Greenhouse Effect	Unit 39
30 W	Pluto and Charon	Unit 46
Oct 5 M	The Outer Satellites, Comets	Units 45, 46 and 47
7 W	Light and Radiation I	Units 21 and 22
12 M	Light and Radiation II	Units 23 and 24
14 W	Our Friend, the Sun	Units 49, 50 and 51
<b>19 M</b>	<b>Second Mid-Term Exam</b>	
	Planetarium EC	
21 W	Basic Properties of Stars	Units 52, 55 and 57
26 M	The H-R Diagram	Units 58, 59, and 61
27 W	Death of Low-Mass Stars	Units 62 and 64
Nov. 2 M	Death of High-Mass Stars	Units 66 and 67
4 W	Black Holes	Unit 68
9 M	Our Milky Way Galaxy I	Units 70, 71 and 72
11 W	<i>Holiday</i>	
16 M	Dark Matter	Units 73 and 78
18 W	Cosmology	Units 76, 79, and 80
23 -25	<i>Thanksgiving Week – No Classes</i>	
30 M	Cosmogony	Units 80, 81, and 82
Dec 2 W	<b>Third Mid-Term Exam</b>	
	Planetarium EC	
7 M	Final Exam Preparation	
<b>9 W</b>	<b>Final Exam</b>	