

COURSE INFORMATION SHEET/SYLLABUS
Monday evening section

Instructor: S. Vincent Lloyd

Phone extension: 3246

Office hours:

Monday	10:00–11:00 a.m.
Tuesday	1:00 – 2:00 p.m.
Wednesday	10:00–11:00 a.m.
Thursday	1:00 – 2:00 p.m.
Friday	10:00–11:00 a.m.

Office location: Physics 117H, just north of the Humanities Building.

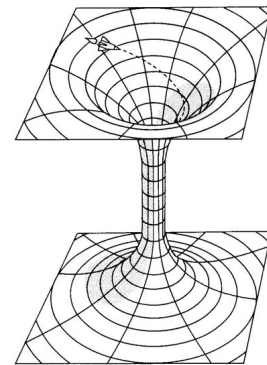
Tutor and S.I. sessions: see instructor website.

Dates: Mondays & Wednesdays, August 28 – December 13.

Holiday: Monday Sept. 4 (Labor Day).

email: svlloyd@elcamino.edu

website: www.sabik.org

**Course Description**

Greetings, Earthlings! You are about to embark on a journey into the depths of space and towards the beginning of time! Astronomy 25 is an introductory-level course which tells the story of the Universe from the Big Bang to the rise of life on Earth.

The course has no astronomy, physics, or math prerequisites. There is not much math in the course, although you should know concepts like squares and exponents. There is a lot of physics ideas in the course, since we need to understand the laws of physics in order to interpret what we see in the sky. If you are not interested in learning some basic physics concepts, you should consider taking another course, such as Astronomy 20 (the Solar System).

Credit for Astronomy 25 is fully transferable to the California State University system. Credit is fully transferable to the U.C. system unless you also take Astronomy 20 (see a counselor if you have taken Astro 20 and are planning to transfer to a U.C.).

This is a 3 unit course. Each unit represents three hours of work. One of those hours is spent in class; the other two hours are study outside the classroom. We meet for 3 hours every week, so you are expected to study 6 hours a week at home.

Course Objectives

The objective of Astronomy 25 is to give you an insight into the Earth's place in the cosmos. At the end of the course, you will be expected to be able to:

1. Explain the difference between science and "pseudo-science."
2. Explain the causes of seasonal variations in the length of the day, the direction of sunrise and sunset, and the amount of solar heating.
3. Explain how astronomers use the properties of light to learn about stars and galaxies.
4. Discuss the effect of the solar cycle on the Earth.
5. Compare different ways astronomers use to measure the distances to the stars.
6. Contrast the life history of a low-mass star with the life history of a high-mass star.
7. Describe the properties of space and time around a black hole.
8. Describe the structure and contents of the Milky Way Galaxy.
9. Compare and contrast the different kinds of galaxies.
10. Show how galaxies are arranged in clusters, walls, and voids.
11. Discuss the process of nuclear fusion, the energy source of stars, and explain where the chemical elements come from.
12. Discuss the evidence for Dark Matter and Dark Energy.
13. Evaluate the significance of the major evidence in favor of the Big Bang theory.
14. Discuss the factors affecting the possibility of intelligent life around another star.
15. Explain the evidence for the expansion of the Universe.

Student Learning Objectives

1. Students will be able to apply the Scientific Method to the solution of scientific problems.
2. Students will be able to explain how the study of electromagnetic radiation and astronomical instruments are used to reveal the properties of stars and planets.
3. Students will be able to explain the modern theory of the origin of the Universe (the Big Bang Theory) and discuss the evidence that supports the theory.

Required textbooks

Lecture Tutorials for Introductory Astronomy by Prather. BUY THIS BOOK — DON'T RENT IT!

You will be writing in this booklet.

Lloyd's Astronomy Reader by Lloyd (available in the El Camino Bookstore).

Additional materials: 4 Scantron No. **883** forms and 4 Scantron **882** forms, pack of 100 3x5-inch index cards, pencils, ruler, & protractor.

On-line textbook: www.teachastronomy.com (free).

Attendance and Withdrawal

Regular attendance is expected of every student who wants to be successful in this course. Keep in mind that coming to class *by itself* will *not* earn you a passing grade, while *not* coming to class makes it exceedingly difficult to pass the course. If you can't make it to class one day, check the instructor's website to see what you have missed.

The instructor *may* drop you from the course if you miss **more than 3** classes. Notify the instructor if you have to miss two or more classes in a row. If you decide *not* to complete the course, it is *your* responsibility to drop the course on-line (if it is before the last day to drop). Otherwise, you may end up with an "F" for this course on your transcript.

Important dates

Last day to drop without a "W"

Last day to drop with a "W"

Friday, Sept. 8

Friday, Nov. 17

A "W" (withdrawal) means that you attempted the course but did not complete it; it doesn't affect your Grade Point Average (GPA), but a large number of Ws will cause you to be put on Progress Probation. (Progress Probation is explained in the school catalog under "Academic Regulations"). If you stop attending after the "W" date you will probably receive an "F" for the course. If an emergency comes up at that time, ask the instructor for an Incomplete (see page 6).

Assignments and exams

Speech. With a partner, you will make a 2-minute speech about a famous celestial object, a star, star cluster, nebula, or galaxy. This is a 2-person speech; you must have a partner. First you will prepare an outline and bring it to the instructor during office hour. After your outline is approved, you will give your speech. A form for the outline is attached.

The speech is worth **30** points (5% of your course grade).

If you or your partner are absent on the day your talk is scheduled, you will be rescheduled for the next available day, if one is open. If you give your talk on the scheduled day, you will be awarded bonus points. The number of bonus points equals the number of whole weeks left in the semester.

Note: The use of notes is **not** allowed during the talk.

Projects. There will be two homework projects involving observation of the Sun and the stars. Details will be discussed later. One or two students can do the assignment together, but *no more than two*. If you choose to work with a partner, be aware that both partners are responsible for turning the project in on time. Do not show your project to a third person or copy from a third person.

Each project is worth **50** points. Penalty for late projects: 5 points per school day.

Note: Each project is worth 8% of your grade!

FAILURE TO DO THE PROJECTS WILL LOWER YOUR COURSE GRADE AT LEAST ONE FULL GRADE.



Homework.

There will be 4 Mini-essays (worth **10** points each) and 4 Problem Sets (worth **10** points each).

Two students can do the **Problem Sets** together, but no more than two. Do not copy from a third person or let someone else copy your results.

Everyone must write their own Mini-essays **in their own words**. No copying from Mr. Google!

Late homework will not be accepted after the graded homework has been returned.

Note: The homework is 12% of your grade. NOT DOING THE HOMEWORK WILL PROBABLY LOWER YOUR COURSE GRADE AT LEAST ONE FULL GRADE.

There will be 4 quizzes worth **30** points each. The quizzes will be on **Sept. 4, Oct. 2, Oct. 30, and Nov. 27**. Bring a **Scantron 882** or 883 for each quiz.

There are no make-ups for quizzes.; however, the lowest quiz score will be dropped, so you can miss one quiz without penalty.

If you miss a second quiz, you can make up the points by doing extra credit (see below).

Exams. There will be 4 exams worth **100** points each (together making up 50% of your course grade). The exams will be on the following days: **Sept. 18, Oct. 16, Nov. 13, and Dec. 11**. Bring a Scantron No. **883** for each exam.

During the exam, you are allowed to use notes written on **one** standard 3x5-inch index card, written **in your own hand**. It has to be a **pre-cut** file card or index card; pieces of paper you cut out yourself are *not* allowed.

The lowest exam score will be dropped, so there is no penalty for missing one exam. (Exception: any exam in which cheating occurs will automatically get a 0 which will *not* be dropped.)

If an emergency causes you to miss a second exam, you may, at the instructor's discretion, be allowed to take an **oral** make-up exam. *No* notes are allowed during the oral exam. The oral exam must be taken before the next regular exam date.

Study guides: You will be given study guides that will detail what material you are responsible for on the exams. If you can can thoroughly explain all the concepts on the study guide, you should do well on the exam.

If you have a disability that affects your ability to take exams, contact the Special Resource Center well ahead of the exam date to discuss special test-taking arrangements.

Extra credit

You may go to **one** of the following two science museums for up to 30 points extra credit.

Griffith Observatory

Location: Griffith Park; go up Vermont Ave. to the end. Parking is \$4 an hour.
DASH Observatory bus (50¢) leaves from Vermont/Sunset station on the Metro Red Line.
Website: griffithobservatory.org.
Hours: Tuesday–Friday: 12 to 10 pm. Saturday & Sunday: 10am to 10 pm.
Closed Mondays. Closed Thanksgiving Day (also Christmas day).

You will need to get a proof of attendance with a **date** on it:

Options:

- (1) Get a proof of attendance from one of the friendly staff.
- (2) Buy a planetarium show ticket.
- (3) Buy something at the store or the cafe.

A BROCHURE IS *NOT* ENOUGH. A PHOTO IS *NOT* ENOUGH.

**California Science Center**

Location: Exposition Park near the Coliseum. Open daily 10–5.
The museum is free but parking is \$12 (cash only).
Website: www.californiasciencecenter.org.

Be sure to get a proof of attendance with a **date** on it. Options:

- (1) Buy a ticket for the Space Shuttle (\$2) (during peak periods).
- (2) Make a small donation and get a receipt.
- (3) Buy something at the store.
- (4) Buy a ticket for the IMAX theater.

A "SCIENCE PASSPORT" IS *NOT* ENOUGH. A BROCHURE IS *NOT* ENOUGH.
A PHOTO IS *NOT* ENOUGH. A PARKING PERMIT IS *NOT* ENOUGH, EITHER.

Rules for all extra credit

- 1) You can go to Griffith Observatory once *or* the California Science Center once for up to 30 points extra credit.
- 2) Write a **1-page report** and explain 15 things you learned about **science or spaceflight**.
This is an individual report; everyone must write their own report in their own words.
Be specific: tell *what* you learned, not what you learned *about*.

Acceptable: *I learned that the Apollo command module carried three men to the Moon.*
Not acceptable: *I learned about the Apollo program.*

You get 2 points for every specific fact that you describe in your report, up to a maximum of 30 points.

- 3) Attach **proof of attendance** *with a date on it*.
A BROCHURE, PARKING PERMIT, OR PHOTO IS *NOT* SUFFICIENT.
- 4) Turn in your report no later than the week of **Quiz 4**.
"Turning it in" means printing it out and handing it to the instructor (or leaving it on his door); email is *NOT* enough.

NO EXCEPTIONS—not for illness, computer malfunction, natural disaster, or alien abduction!

Grading Scale

Grades are assigned on a point system. There are 600 points possible. The tentative grading scale is shown below; the precise grade breakpoints between A & B, B & C, C & D, and D & F, may be adjusted +/- 2% at the end of the class based on the grade distribution. For example, to guarantee an "A", you will need 552 points or more.

<u>Grade points</u>		<u>Grading scale</u>	<u>Grade points</u>
4 Mini-essays	40	A 90% \pm 2%	540 \pm 12
4 Problem sets	40	B 75% \pm 2%	450 \pm 12
2 Projects	100	C 60% \pm 2%	360 \pm 12
Speech	30	D 50% \pm 2%	300 \pm 12
3 of 4 quizzes	90	F <50%	<300
3 of 4 exams	300		
Total	600		

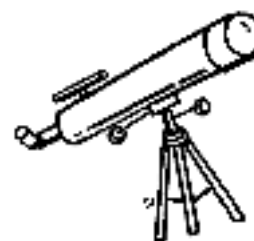
GRADE RECORD

	Points	Cumulative Points	Possible Points	Cumulative Possible Pts
Quiz 1	_____	_____	30	30
Problem set 1	_____	_____	10	40
Mini-essay 1	_____	_____	10	50
Exam 1	_____	_____	100	150
Quiz 2	_____	_____	30	180
Problem set 2	_____	_____	10	190
Mini-essay 2	_____	_____	10	200
Exam 2	_____	_____	100	300
Project 1	_____	_____	50	350
Quiz 3	_____	_____	30	380
Problem set 3	_____	_____	10	390
Mini-essay 3	_____	_____	10	400
Exam 3	_____	_____	100	500
Project 2	_____	_____	50	550
Quiz 4	_____	_____	30	580
Less lowest quiz	_____	_____	30	550
Problem set 4	_____	_____	10	560
Mini-essay 4	_____	_____	10	570
Exam 4	_____	_____	100	670
Less lowest exam	_____	_____	100	570
Speech	_____	_____	30	600
Add any Extra credit	_____	_____	30	600

Grading Policies. The college's standard grading policies can be found in the college catalog under "Academic Regulations" and on-line at:

www.elcamino.edu/admissions/grading.asp

This page contains information on units, grade points, withdrawal, incompletes, and grade change procedures.



Class Policies

Manners. Treat other students and the instructor with respect and courtesy. Do not talk while another student or the instructor is speaking.

Food and drink. Please do not bring drinks other than water into the Planetarium; coffee and soda spills will stain the carpet. Do not eat during class.

Time deadlines. Assignments are considered late if they are given to the instructor **after the end of his last office hour** on the week that they are due. An assignment has to be handed to the instructor during class or office hour or clipped to his office door. Do *not* drop off assignments in the division office. emailed assignments are *not* accepted. Late homework is *not* accepted after the graded homework has been returned. Observing projects turned in late are subject to a 10% per day penalty (not counting weekends or holidays).

Incompletes in the course. An "incomplete" grade will be given only when the student is prevented from finishing the course on time because of an *extraordinary, unexpected* circumstance. Students receiving an incomplete must be doing passing work up to that point. If such an occurrence happens, it is the student's responsibility to contact the instructor immediately to explain the situation and make arrangements to complete the course.

Academic integrity. The following acts are considered dishonest and are not allowed:

On homework assignments and projects: copying someone else's work, making up data, or reporting that you saw something that you didn't see. Copying someone else's homework is against the rules in the United States. So is letting someone else copy your work.

On exams or quizzes: copying from another student's answer sheet or using notes other than those allowed by the instructor. Letting someone else copy your answers is also unethical.

Taking an exam or quiz copy home.

Any quiz or exam during which cheating occurs will automatically get a 0 which will not be dropped.

Students who do any of these actions are subject to disciplinary action.

For a complete list refer to the El Camino College Catalog:

Students' Rights and Responsibilities: Policies and Procedures: Definitions (p. 37).

Recording devices in the classroom

The use of any recording device during class without the prior consent of the instructor is prohibited, except as necessary to provide reasonable auxiliary aids and academic adjustments to disabled students who present official documentation from the Special Resource Center to the instructor prior to recording. This is to protect privacy and to create a safe classroom environment where all participants can discuss potentially controversial or sensitive subjects freely. If you want to take a photograph or make an audio or video recording, you must get the prior written permission of the instructor. The instructor also may require the verbal and/or written permission of everyone present. Even if a student gets permission to record, the recordings are only for personal use and may not be distributed, posted, published, or shared in any manner. A student who records without instructor permission or distributes any recordings is subject to disciplinary action in accordance with El Camino College District Administrative Procedure 5500 Standards of Student Conduct.

Students with disabilities

El Camino College is dedicated to providing access to education for students with disabilities. For further information, see the El Camino Catalog, Special Resource Center. Students with disabilities should inform the instructor especially if there are medical problems or learning disabilities. Accommodations may be provided as recommended by the Special Resource Center. See www.elcamino.edu/academics/src/

COURSE CALENDAR/TOPIC OUTLINE

Week	Date	Topic
1	8/28	Orientation
		Bad Astronomy
2	9/4	HOLIDAY NO CLASS
3	9/11	The Universe in space & time/ Quiz 1
		Daily Motion of the Sky: 4 Sky Gems
4	9/18	Star Paths
		Exam 1
5	9/25	The Annual Motion of the Sun; the Zodiac
		Great Discoveries 1 and 2/Parallax
6	10/2	Great Discoveries 3; Inverse Square Law
		Great Discovery 4/Cepheid variable stars/ Quiz 2
7	10/9	Great Discovery 5/Doppler Effect
		The Big Bang Theory
8	10/16	The First Million Years
		Exam 2
9	10/23	The Seasons
		Seasons around the world
10	10/30	Galaxies
		The Milky Way/ Quiz 3 /
11	11/6	Dark matter
		Stars: distance
12	11/13	Stars: brightness/Inverse Square Law
		Exam 3 LAST WEEK TO DROP
13	11/20	Stars: emission of light
		Kinds of stars
14	11/27	The Scientific Method/The Sun
		Life histories of stars/ Quiz 4 / Extra credit report due
15	12/4	The lives and deaths of high-mass stars
		Black holes/Pseudoscience
16	12/11	Life in the Universe
		Exam 4



TIPS FOR SUCCESS IN YOUR ASTRONOMY COURSEWhile you are away from campus

1. Get a student calendar and put in your exam dates and assignment due dates.
2. Set aside a regular time and place to study your astronomy every week. You are expected to study six hours every week!
3. Make college a priority in your life. For example, don't make appointments during class time.
4. Do your homework.
5. Make flash cards to prepare for tests.

While you are on campus

1. Buy four Scantron 888 forms the first week so you will have one on test day. Also get a stack of 3x5-inch index cards.
2. Find out where the instructor's office is and when his office hours are.
3. Get to know the tutor. She's in the library on the 2nd floor, west end.
4. Attend the S.I. sessions
5. Form a study group with others in the class.
6. Take an Academic Strategies class.

While you are in class

1. Get to class five minutes early and review your notes from last time.
2. Turn off your cellphone. Do student 100%.
3. Take enough notes during class that at the end of the week you will be able to tell what the lecture was about.
4. Raise your hand when something is not clear. The thing will no doubt be unclear to many others in class.
5. Do the lecture-tutorials completely and conscientiously. See the tutor or visit the instructor during his office hour if you don't understand something.

Thanks to Dave Pierce for suggestions.

"We are not here to worship what is known, but to question it."—J. Bronowski

EXAMPLE: SPEECH OUTLINETopic ___ **M81** ___ Outline due_____ Speech Date _____*List your talking points. Don't write out complete sentences. Be neat.***I. Introduction****_M81 _ is interesting because...****My favorite galaxy.****II. Middle***Give the basics about your subject: what, where, how big? Don't give too many numbers.***A. Classification.****A spiralgalaxy
star formation in spiral arms****B. Location****constellation: Ursa Major
12 million LY away
Ursa Major family — neighboring galaxy group
nearby M82 another big galaxy****C. Size****about 100.000 LY across
size of Milky Way****D. Supernova****SN 1993J
unusual type of exploding star
led to reclassification of certain kinds of SN's****III. Conclusion****_____ is important because...****M81 & M82 have distorted each other, showing how neighboring galaxies affect each other****IV. References***List at least two references.***en.wikipedia.org/wiki/Messier_81****coolcosmos.ipac.caltech.edu/cosmic_classroom/multiwavelength_astronomy/multiwavelength_museum/m81.html**

NAME _____
 Home town _____
 High school _____
 Major _____
 Other info _____

NAME _____
 Home town _____
 High school _____
 Major _____
 Other info _____



Approval

SPEECH OUTLINE

Topic _____ Outline due _____ Speech Date _____

List your talking points. **Don't** write out complete sentences. Be neat.

I. Introduction: _____ is interesting because...

II. Middle. Give the basics about your subject: what, where, how big?

III. Conclusion. _____ is important because...

IV. References

List at least two references with complete URLs.