

COURSE INFORMATION SHEET/SYLLABUS
Monday/Wednesday sections

Instructor: S. Vincent Lloyd

Phone extension: 3246

Office hours: Monday 11:00–12:00 pm
Tuesday 2:00–3:00 pm
Wednesday 11:00–12:00 pm
Thursday 2:00–3:00 pm
Friday 10:00–12:00 noon

email: svlloyd@elcamino.edu

website: www.sabik.org

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

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

Dates: Mondays & Wednesdays, Feb. 12– June 6

Holidays: Monday Feb. 19 (Washington's Birthday), Monday May 28 (Memorial Day).

Spring break: April 9–13.

Course Description

Greetings, Earthlings! You are about to embark on a journey to our neighbor worlds in the cosmos! Astronomy 20 is an introductory-level course which concentrates on the foundation of modern astronomy and the study of the major worlds of the Solar System. The course has no astronomy, physics, or math prerequisites; however, knowledge of basic high school algebra is sometimes helpful.

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

This is a 3 unit course. That means that students are given credit for 9 hours of work every week. (Each unit represents three hours of work.)

Course Objectives

The objective of Astronomy 20 is to give you an insight into what makes the Earth a special place for life. During the course, the student will learn how to:

1. Explain the difference between science and "pseudo-science."
2. Predict the phase of the Moon that would be seen in the sky, given the positions of the Earth, the Sun, the Moon, and the observer.
3. Explain the causes of seasonal variations in the length of the day, the direction of sunrise and sunset, and the amount of solar heating.
4. Discuss the Copernican Revolution, the controversy over whether the Sun or the Earth is the center of the Solar System.
5. Compare the major planets and moons of the Solar System.
6. Explain how the age of the Solar System is determined.
7. Explain how the forces of impacts, volcanism, tectonics, and erosion shape the surface of planets.
8. Compare the composition and properties of the atmospheres of the planets.
9. Compare the climates of the inner planets and discuss why they are different.
10. Contrast the terrestrial planets from the gas giants, ice giants, and icy moons.
11. Discuss the conditions necessary for life on a planet.
12. Sketch how the planets were formed.

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 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.
3. Students will be able to describe the modern theory of the origin of the planets 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"

Friday, Feb. 23

Last day to drop with a "W"

Friday, May 11

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, Exams, and Grades

Speech. With a partner, you will make a 2-minute speech about a small member of the Solar System, a moon, asteroid, comet, or KBO (Kuiper Belt Object). 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 be ready for your speech. A form for the outline is attached. The speech is worth **50** points (8% 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 Moon. Details will be discussed later. You can do the project by yourself or with one partner, but *no more than two people* can work together. If you choose to work with a partner, be aware that both partners are responsible for turning the project in on time. Do not copy from a third person or let someone else copy your results.

Each project is worth **50** points. Penalty for late projects: 5 points per school day. Late projects will be accepted only if they have at least one stamp.

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 Problem Sets (worth **15** points each).

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

NO LATE HOMEWORK IS ACCEPTED.

Note: The homework is 10% of your grade. NOT DOING THE HOMEWORK WILL PROBABLY LOWER YOUR COURSE GRADE AT LEAST ONE FULL GRADE.

Quizzes. There will be 4 quizzes worth **30** points each. The quizzes will be on **Feb. 21, Mar. 21, Apr. 25, and May 23**. All quizzes are on **Wednesdays**. Bring a **Scantron 882** 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 a museum visit as described under Extra Credit on the next page.

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 **Wednesdays: Mar. 7, Apr. 4, May 9, June 6**. 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. 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: For each exam, you will be given a study guide that lists the concepts and terms you are expected to know for the exam. If you 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. In addition, you may make an additional visit to make up for a quiz you have missed if you miss more than one quiz.

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.

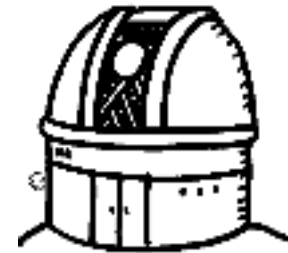
Hours: Tuesday–Friday: 12 to 10 pm. Saturday & Sunday: 10am to 10 pm.

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

Grade points		Tentative grading scale		
4 Problem sets	60	>90% \pm 2%	A	540 \pm 12
2 Projects	100	>75% \pm 2%	B	450 \pm 12
Speech	50	>60% \pm 2%	C	360 \pm 12
3 of 4 quizzes	90	>50% \pm 2%	D	300 \pm 12
3 of 4 exams	300	<50%	F	<300
Total	600			

The grade breakpoints shown above are approximate; they will be adjusted at most 2% up or down at the end of the semester. This means that in order to guarantee an "A," for example, you need to get at least 92% or 552 points.

GRADE RECORD	Points	Cumulative Points	Possible Points	Cumulative Possible Pts
Quiz 1	_____	_____	30	30
Problem set 1	_____	_____	15	45
Exam 1	_____	_____	100	145
Quiz 2	_____	_____	30	175
Problem set 2	_____	_____	15	190
Exam 2	_____	_____	100	290
Project 1	_____	_____	50	340
Quiz 3	_____	_____	30	370
Problem set 3	_____	_____	15	385
Exam 3	_____	_____	100	485
Project 2	_____	_____	50	535
Quiz 4	_____	_____	30	565
Less lowest quiz	_____	_____	30	535
Problem set 4	_____	_____	15	550
Exam 4	_____	_____	100	650
Less lowest exam	_____	_____	100	550
Speech	_____	_____	50	600
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

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

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

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. Homework is *not* accepted after the due date. Observing projects turned in late are subject to a 10% per day penalty (not counting spring break).

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.

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.

You can read the official college policies at:

www.elcamino.edu/administration/board/boarddocs/AP%205500%20Standards%20of%20Student%20Conduct.pdf

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

Week	Date	Topic
1	2/12	Why learn astronomy?
	2/14	Bad Astronomy
2	2/19	—HOLIDAY—
	2/21	Universe overview/ Quiz 1
3	2/26	Starrise and Starset: the Celestial Sphere
	2/28	Sun Time/ The Zodiac: the Annual Motion of the Sun.
4	3/5	Motions of the Planets.
	3/7	Exam 1
5	3/12	Ptolemy/Copernicus
	3/14	Galileo & the Telescope
6	3/19	Tycho/Kepler's 1st Law/
	3/21	Quiz 2
7	3/26	Kepler's 2nd & 3rd Laws of Planetary Motion
	3/28	Law of Inertia/ the Pisa Principle /Orbital Motion
8	4/2	Law of Gravity/Orbits/
	4/4	Exam 2
9	4/16	The Seasons: Why is it hot in summer?
	4/18	Seasons activity/Scientific Method:
10	4/23	Solar System overview/Origin of S.S./
	4/25	Moon phases/ Quiz 3
11	4/30	Moon geology
	5/2	Mercury/Tidal force
12	5/7	Atmospheres, LAST WEEK TO DROP
	5/9	Exam 3
13	5/14	Greenhouse Effect.
	5/16	Mars/
14	5/21	Venus/Pseudoscience/
	5/23	Earth/ Quiz 4 Last day for Extra credit report
15	5/28	—HOLIDAY—
	5/30	Jupiter and Saturn./Uranus and Neptune
16	6/4	Giant moons of the outer solar system.
	6/6	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 all your Scantron 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. Form a study group with others in the class.
5. 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 so 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 ____ **Dactyl** ____ Outline due _____ Speech Date _____*List your talking points. Don't write out complete sentences. Be neat.***I. Introduction***_Dactyl_ is interesting because...*

I was one of the first to hear of its discovery.

Galileo spacecraft
Ida encounter**II. Middle***Give the basics about your subject: what, where, how big? Don't give too many numbers.***A. Classification**

Asteroid moon

B. Locationorbits Ida
main asteroid belt
Koronis family — breakup of larger asteroid**C. Size**about 1 mile
size of ECC**D. Orbit**about 50 miles from Ida
orbital period about 20 hours
jogging speed**E. Composition**

rocky, like stony meteorites

F. Surface features

covered with craters

III. Conclusion_____ *is important because...*1st asteroid moon — common phenomenon
evidence for breakup of Koronis parent body**IV. References***List at least two references with complete URLs.**en.wikipedia.org/wiki/Dactyl_%28moon%29#Moon*
www.solarviews.com/eng/ida.htm

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

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 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.