

**COURSE INFORMATION SHEET/SYLLABUS**  
**Monday/Wednesday sections**

*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.

*email:* [svlloyd@elcamino.edu](mailto:svlloyd@elcamino.edu)

*website:* [www.sabik.org](http://www.sabik.org)

*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).



### **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 high school pre-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 recognize the elements of the Scientific Method in the discussion of a scientific problem.
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).

*On-line textbook*: [www.teachastronomy.com](http://www.teachastronomy.com) (free).

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

### **Attendance and Withdrawal**

The College expects students to attend every class (except in case of illness or emergency). Keep in mind that while coming to class *by itself* will *not* earn you a passing grade, *not* coming to class makes it exceedingly difficult to pass the course. If you can't make it to class, check the instructor's website to see what you have missed. *Contact the instructor if you miss two or more classes in a row.*

The instructor may drop you from the course if you miss **more than 3** classes before the last day to drop. However, he might *not* drop you if he doesn't notice that you're not in class. 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, Sept. 8**

Last day to drop with a "W"

**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 academic probation. 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 TNO (Trans-Neptunian 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 **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.**

You will do 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 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!  
NO LATE HOMEWORK IS ACCEPTED.

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

**Quizzes.**

There will be 4 quizzes worth **30** points each. The quizzes will be on **Sept. 6, Oct. 4, Nov. 1, and Nov. 29**. All quizzes are on **Wednesdays**. 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 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: Sept. 20, Oct. 18, Nov. 15, and Dec. 13**. 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 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](http://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](http://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.

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

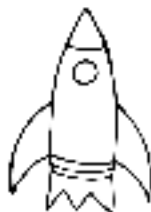
### GRADE RECORD

	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 at:

[www.elcamino.edu/admissions/grading.asp](http://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/](http://www.elcamino.edu/academics/src/)



### TOPIC OUTLINE

Week	Date	Topic
1	8/28	Why learn astronomy?
	8/30	Bad Astronomy
2	9/4	—HOLIDAY—
	9/6	Universe overview/ <b>Quiz 1</b>
3	9/11	Starrise and Starset: the Celestial Sphere
	9/13	Sun Time/ The Zodiac: the Annual Motion of the Sun.
4	9/18	Motions of the Planets.
	9/20	<b>Exam 1</b>
5	9/25	Ancient Astronomy
	9/27	The Copernican Revolution
6	10/2	Kepler's Laws
	10/4	Law of Inertia/ the Pisa Principle /Orbital Motion <b>Quiz 2</b>
7	10/9	Law of Gravity/Orbits/
	10/11	The Seasons: Why is it hot in summer?
8	10/16	Seasons activity/Scientific Method:
	10/18	<b>Exam 2</b>
9	10/23	Solar System overview/Origin of S.S./
	10/25	Terrestrial Plonets
10	10/30	Moon origin
	11/1	Moon phases/ <b>Quiz 3</b>
11	11/6	Moon geology
	11/8	Mercury/Tidal force
12	11/13	Atmospheres, / Greenhouse Effect. <b>LAST WEEK TO DROP</b>
	11/15	<b>Exam 3</b>
13	11/20	Mars
	11/22	Venus
14	11/27	Earth/
	11/29	Jupiter and Saturn./ <b>Quiz 4</b> <b>Extra Credit report due</b>
15	12/4	Uranus and Neptune/ Pseudoscience/
	12/6	Giant moons of the outer solar system.
16	12/11	Eclipses
	12/13	<b>Exam 4</b>



**TIPS FOR SUCCESS IN YOUR ASTRONOMY COURSE**While 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 spend six hours every week on study and homework.
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 exams.

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 or he is 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, such as *Test-Taking Strategies, Listening and Note-taking Strategies, or Thinking Skills for College Courses*.

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. They will be grateful to you.
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 OUTLINE

Topic \_\_\_\_ **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.

### II. Middle

*Give the basics about your subject: what, where, how big? Don't give too many numbers.*

#### A. Classification

Asteroid moon

#### B. Location

orbits 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, due to asteroid collision.

### 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 \_\_\_\_\_

NAME \_\_\_\_\_  
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 High school \_\_\_\_\_  
 Major \_\_\_\_\_  
 Other info \_\_\_\_\_



Approval

### SPEECH OUTLINE

Topic \_\_\_\_\_ Outline due \_\_\_\_\_ Speech Date \_\_\_\_\_

*Make an outline organized by topic and subtopics. **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. etc.?*

**III. Conclusion**

\_\_\_\_\_ *is important because...*

**IV. References**

*List at least two references, with complete URLs.*