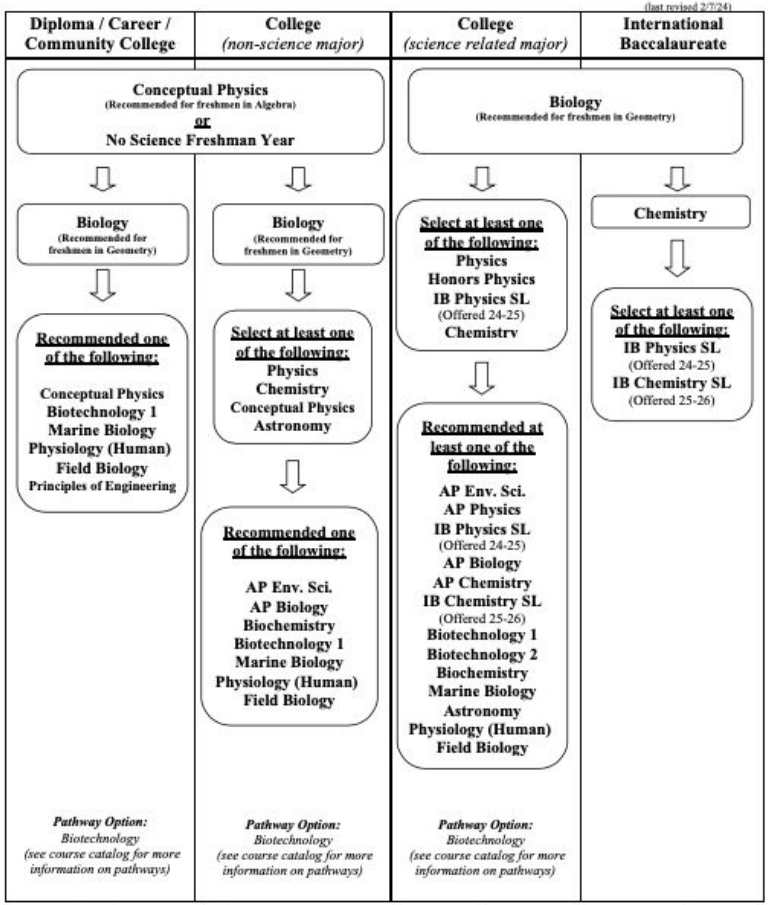

Exploring
Science
Classes
Granada High School
2024-2025

There is a copy of this flow chart on the Granada Website- Go to EXPO CENTRAL and then to Deartment Information

# What Science Classes Should I Take?

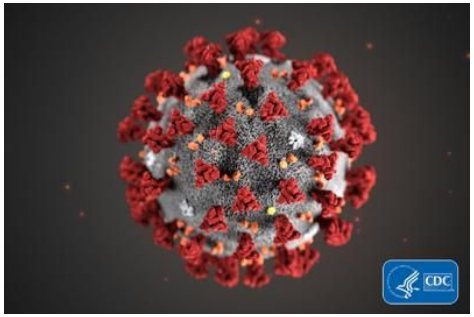
(last revised 2/7/24)




- All students must complete **10 units of physical science** and **10 units of biology** to graduate.
- Most courses have prerequisites that are listed in the course catalog.

Questions- email
elopez@lvjusd.org
tgrass@lvjusd.org
or any GHS science Teacher

# Life Science Course Offerings




Biology

Biotechnology 1

Biotechnology 2

Human Physiology


Field Biology

Marine Biology

AP Biology

# Biology

**Length: 1 year** **Grade Level: 9 - 12**

**College: UC/CSU “d” Lab Science Requirement**

**Prerequisite: Recommended completion of Algebra I .**

**Description: Biology is a rigorous, lab-oriented course that prepares students for college biology. Topics include evolution, genetics, reproduction, cells, ecology and biotechnology.**

UC Approved Lab Science

UC-D

Micropipettes

# BIOTECHNOLOGY 1&2

## Prerequisites

1. Biology A/B with a C or better

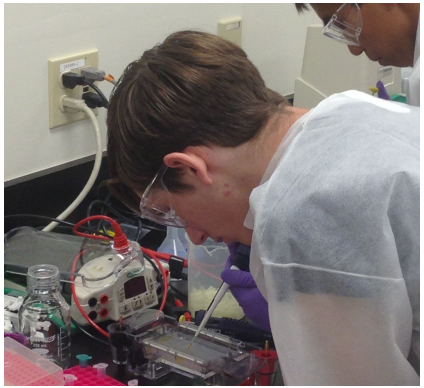
2. Algebra A/B with a C or better

Bacterial Culture

Bacterial Cloning

Gel Electrophoresis

# Why should I take Biotechnology?



A very hands on UC-d lab science class (up to 15 units)

Get graded on your work ethic not test performance.

Covers high-level lab skills such as plant genetics, tissue culture, and bacterial cloning.

Good class for non science majors who need more UC-d courses to be competitive for college applications.

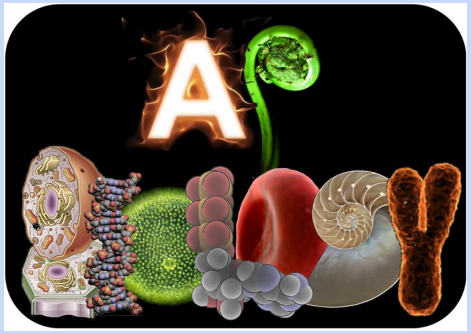
Great class for science majors: Get REAL lab skills to set you ahead in college!

Feedback from former students who are at UC is that they are far more prepared for their lab classes than their peers, and have the skills to get the internships!

Get scientifically published in Biotech 2 it looks great on college apps!

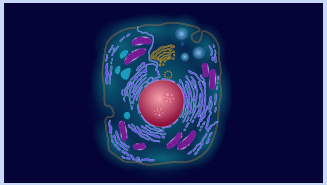
Biotech 1A/B is a 1 year course.  Biotech 2 A is a 1 semester course

# AP Biology




If you like Biology, you'll love AP Biology:

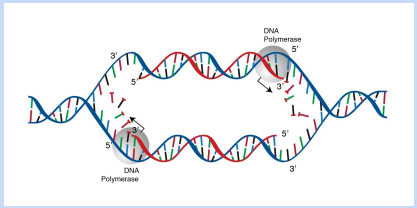
Learn in detail how cells function and communicate with each other



Learn how evolution is one of the unifying principles of biology

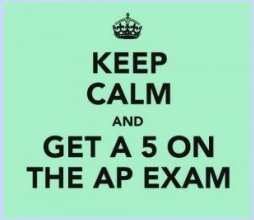
Learn how organisms are all inter-related in ecology

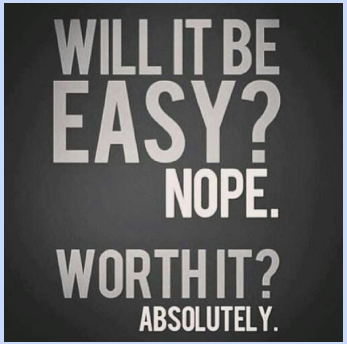
Learn how to perform and write up complex experiments



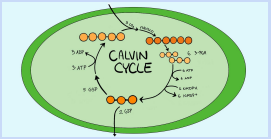


# AP Biology



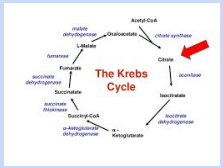




Be prepared to take the AP Biology Exam, and much better prepared for college Biology.




Earn College credit for the class if you score a 4 or 5 on the AP Exam.

Prerequisite: Completion of Biology A/B & Chemistry A/B with B (3.0) or better.
Recommended successful completion or concurrent enrollment in Algebra II.




# Field Biology

- Explore local wild lands on weekly field trips. See and learn about the animals & plants that live there.
- Learn about California's diverse and interesting environments
  - no other state has elevations from below sea level to over 14,000 feet!

# Field Biology

- Field Biology is looking for motivated students who want to learn by seeing biology in action, not just in a textbook.
- The class satisfies UC "D" Elective requirement
- Prerequisite: C or better in Algebra, and Biology.

# Human Physiology!

## ~ An in depth look at the human body ~

- An advanced HUMAN biology course
- UC-d approved lab science, 2 semesters long
- For students interested in health, human body & medical careers
- For any student interested in an in-depth look at how the body works
- Uses a college level Anatomy & Physiology book
- Involves multiple dissections and numerous labs

**<u>Prerequisites</u>: Completion of biology & chemistry with a C or better, or by permission of instructor**

# LABS! ACTIVITIES! EXPERIENCES!
# We learn by DOING!

- LOTS OF LABS! 16 total within Physio A & B
- Lots of technology & hands on activities
- Lots of life & personal health application ☺

- Dissections:
  - Sheep Brains
  - Fetal Pigs (Week long)
  - Sheep Hearts
  - Cow Eyes
  - Sheep Kidneys
  - Cow Femur
  - Chicken Wings: Muscle & Bone Dissection

**Other lab topics: YOU are the specimen:**

1. EKG: your heart beat analysis
2. Blood Pressure
3. Reflexes
4. Sensory Experimentation
   *Taste, touch, hearing, balance, vision
5. Lung Capacity

Also includes microscope work on human cells:
Blood, Bone, Skin, Muscles

# Marine Biology

Marine Biology is the study of plants and animals inhabiting the natural marine communities of California.

This course is for students who are interested in learning about the ocean, and/or are considering a college major in the biological sciences.

- UC-d lab science course
- Two semesters

Prerequisite: C or better in Biology 1A & 1B

- Labs
- Dissections
- Projects
- Group Work

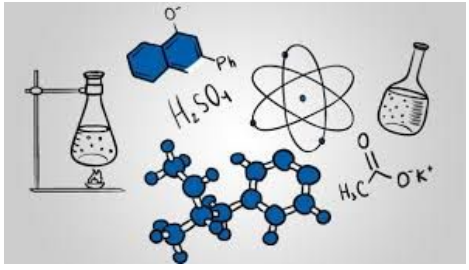
# Simple to Complex

- Sponges
- Jellies, Corals & Anemones
- Worms
- Mollusks (Snails, Clams, Squid etc.)
- Crabs and Lobsters
- Seastars, Urchins, Sanddollars
- Sharks, Rays & Boney Fish
- Marine Mammals

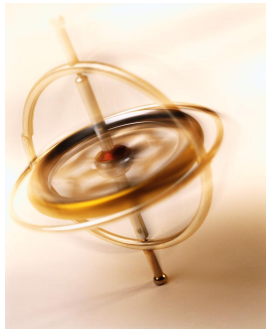
# Themes

- Coral Reef
- Kelp Forest
- Intertidal Community
- The Deep
- Mussel Beds
- Fishing
- Aquaculture
- Environmental Issues

Questions?
email Ms Grass
tgrass@lvjusd.org

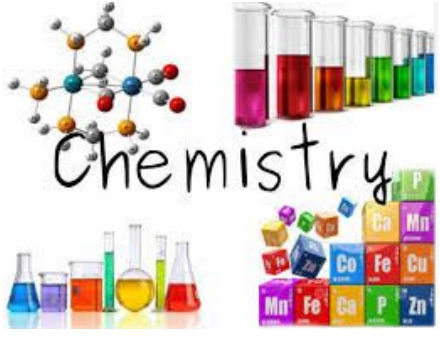


# Physical Science Course Offerings



## Chemistry courses

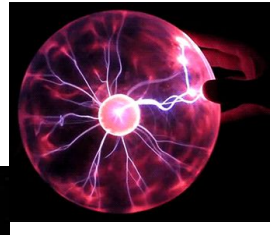
Chemistry
IB Chemistry
AP Chemistry
Biochemistry




Astronomy
AP Environmental Science

## Physics courses

Physics
Conceptual Physics
IB Physics
AP Physics



# Chemistry

**Prerequisite: successful completion of Algebra I. Suggested completion of Biology 1A/B**

**Chemistry is a lab-based college prep course (UC/CSU “d” lab science requirement).**

**Completion fulfills the physical science graduation requirement**

**For students considering a science or medical based field**

# Biochemistry

**<u>Prerequisite:</u> successful completion of Algebra I and Chemistry A/B**
**Suggested completion of Biology 1A/B**

**1 semester 5 unit course covering the chemistry of carbohydrates, lipids, proteins, nucleic acids, and metabolic pathways.**

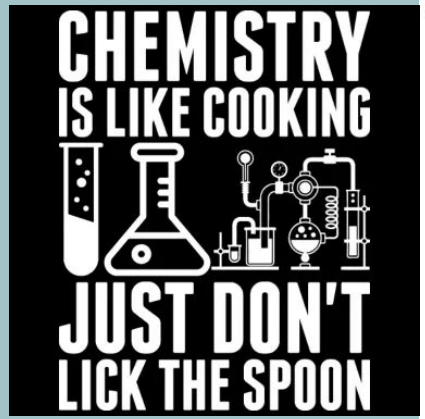
**Get ahead for college chemistry/ organic chemistry/ biochemistry**

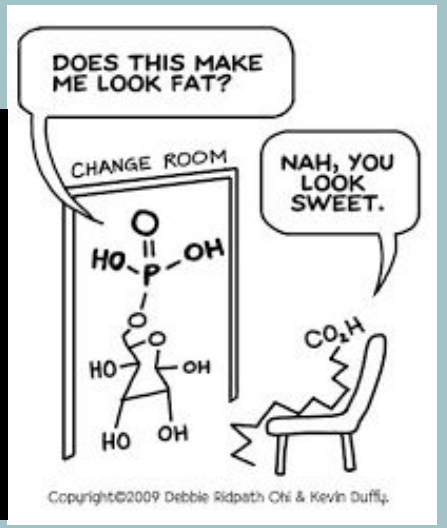
## <u>Some of the labs are</u>

**Here Taste This: why are some carbs sweet**

**Making soap**

**Making familiar smells: ester formation**



# IB Chemistry

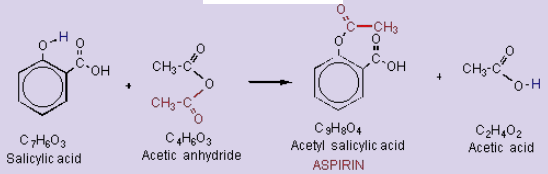
**<u>1-year</u> long; UC-d approved lab science**

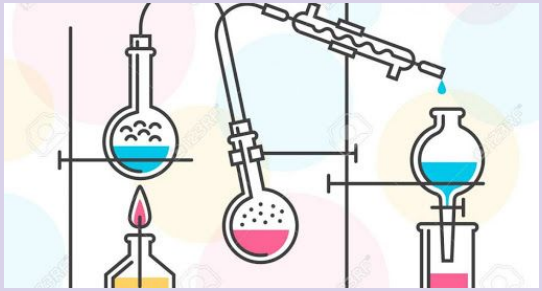
*For students with a medical career or career in science in mind*

**Focus on lab process - Learning HOW and WHY rather than WHAT**

**Prerequisite:** Completion of Biology and Chemistry <u>at Granada</u> with a C or better

**Contact Ms. Grabowski for more info -** mgrabowski@lvjusd.org



## Group 4 Project!

- Collaboration with the other IB Sciences run in the same year

-4-6 week group LAB

-Preparation for IA

## Individual Investigation (IA)

-Pick your own chemistry topic and perform your own lab!

-Requires planning, organization, and self-motivation

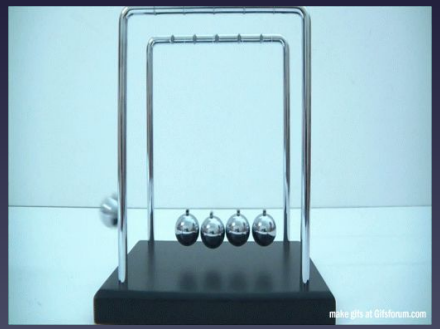
# AP Chemistry

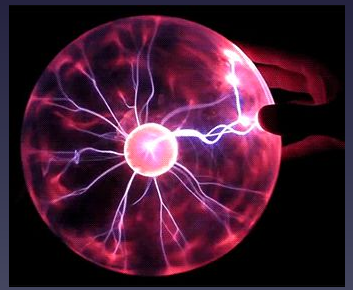
- Prereq: Successful completion of Chemistry 1A/B and Algebra II
- Provides a deeper look into topics covered in the first year of chemistry.
- Lab based course--more in depth and advanced labs with opportunities for inquiry activities
- Taking the AP exam at the end of the year can earn you college credit (scores of 3 or higher)
- Great for those interested in medical or science majors
- Email kdinino@lvjusd.org for more info

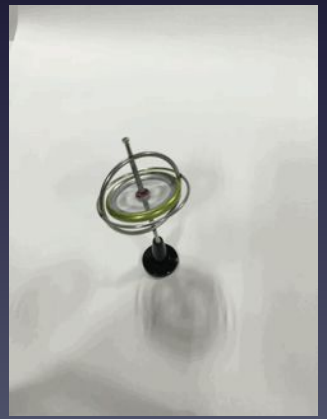
# Why take Physics?

1. Physics is the basis of *all* science!
2. Physics answers questions about why things in the world work the way they do, from rockets to rainbows!
3. PHYSICS IS AWESOME!!!

AND WE GET TO PLAY WITH THE COOLEST TOYS!!!



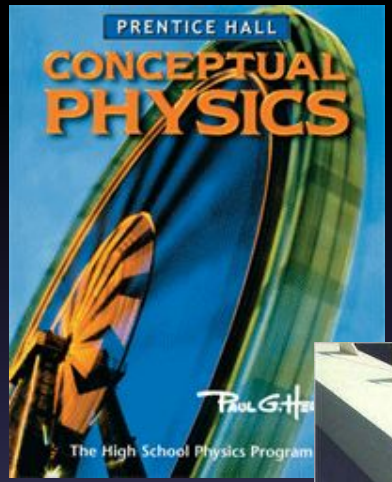


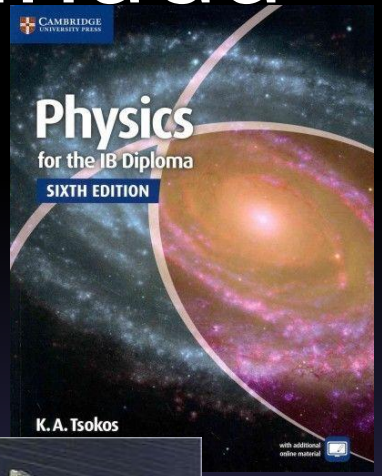


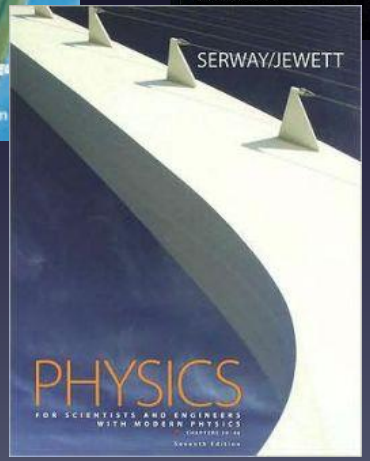
# Physics courses at Granada

- Physics
- Honors Physics/

  IB Physics (SL)
- AP Physics C – Mechanics
- Conceptual Physics



# Physics

- 1st year physics course
- Algebra/Geometry-Based
- UC "D" Credit: College-Prep Lab Science
- Prerequisite: Completion of Geometry with C or better.
- Curriculum includes motion, forces, energy, momentum, gravity, rotation, waves, sound, light, electricity and magnetism.

# Honors/IB Physics (Standard Level)

- 1st year physics course
- Trigonometry-Based
- UC "D" Credit: College-Prep Lab Science
- Prerequisite: Completion of or concurrent enrollment in Precalculus.
- Whether a student received credit for "Honors Physics" or "IB Physics" on their transcript depends on whether they undertake the IB-required independent investigation and take the IB exam in May.
- Curriculum includes motion, forces, energy, momentum, gravity, thermodynamics, fluid physics, waves, sound, light, electricity and magnetism, atomic, nuclear, and particle physics, and astrophysics.

# Why Choose Honors/IB Physics ?

- Best prep for science/engineering major
- Best prep for AP Physics
- UC/CSU weighted grade/grade bump!
- Feather in your cap for college app!
- Opportunity to study cool modern physics topics missing from other courses – nuclear physics, particle physics, astrophysics, relativity!

# AP Physics

- Full name of course: AP Physics C – Mechanics
- 2nd year physics course
- Calculus-Based
- UC "D" Credit: College-Prep Lab Science
- Prerequisite:
  - Completion of or concurrent enrollment in AP Calculus (AB or BC).
  - Completion of Physics or IB Physics recommended
- This course will emphasize the topics of mechanics: force and motion, energy, momentum, gravitation, and rotation.

# Why Choose AP Physics

- Prep for physical science/engineering majors
- Grade bump awarded by LVJUSD, UC schools, and most US colleges!
- Historically very high AP exam pass rate at GHS
- Feather in cap for college applications

# Conceptual Physics

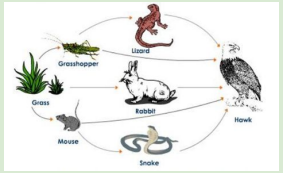
- Prereq: Enrolled in or completion of Algebra 1
- Conceptual Physics explores how the laws of physics can be applied to phenomena in our universe.
- Lab intensive course - Virtual and Hand-On Labs are used to explore how physics is used to solve real-world problems.
- Great for students who are interested in Physics, but are not enrolled in advanced math classes at this time.

# AP Environmental Science

Any questions?
Contact Mrs. Cleveland -
acleveland@lvjusd.org

- Length: 2 Semesters
- Grade Level: 11 - 12
- College: UC/CSU “d” Lab Science Requirement
- Prerequisite: Algebra I; “C” or better in two prior lab courses, one biological and one physical, recommended

Topics Covered:
- ✔Ecosystems
- ✔ Biodiversity
- ✔ Populations
- ✔ Earth Systems and Resources
- ✔ Land and Water Use
- ✔ Energy Resources and Consumption
- ✔ Pollution
- ✔ Global Change



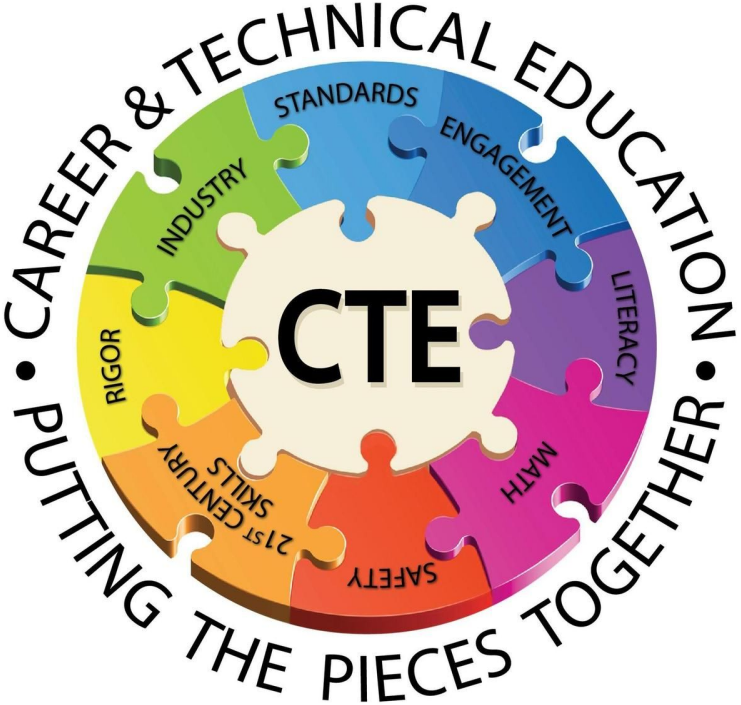

This course is for students who want to learn more about how we impact the world around us. Environmental Science is interdisciplinary, embracing geology, biology, environmental studies, environmental science, chemistry, and geography!

Semester-long EcoColumn Project!

# Astronomy

- To be offered 2025-2026 school year
- Prerequisite:
  - Completion of  Geometry (C or better).
- UC "D" credit: College-Prep Lab Science
- In this course, students study a wide variety of astronomical phenomena ranging from volcanoes on Jupiter's moons to black holes and exploding stars to the Big Bang and the beginning of the Universe itself!
- Additional topics: wormholes, time travel, parallel universes, and alien life!
- Students will learn how a combination of observation, calculation, and reason have allowed humankind to begin to unravel the deepest mysteries of the cosmos!

# Career Technical Education (CTE) Course Offerings



# Principles of Engineering

- UC "G" credit: College-Prep Elective
- 2nd course in Granada's Engineering Pathway (Introduction to Engineering Design is the 1st), but IED NOT required
- Prerequisite:
  - Completion of Geometry (C or better).
- This hands-on course will emphasize the topics of engineering: Mechanisms, Energy Sources, Energy Applications, Fluid Power, Statics, Material Properties and Testing, Statistics, and Kinematics
- GET COLLEGE CREDIT (without having to take an AP Exam!) FROM LAS POSITAS BY TAKING THIS CLASS!!!