

# Chemistry

<http://www.pacificu.edu/as/chemistry>

Students planning a career in Biology, Chemistry, Medicine, Optometry, Physician Assistant Studies, Pharmacy or Physical Therapy should take General Chemistry I & II as soon as possible, assuming student preparation is adequate. The minimum math prerequisite is Math 122 for the first semester and Math 125 for the second semester. Basically, first-year students who place into Math 125 or higher should enroll in that math course as well as Chem 220.

*Sometimes a student begins the term enrolled in Chem 220 and Math 125, but then discovers that Math 122 is the more appropriate level. Dropping back to Math 122 can be done and should be done if the student is overwhelmed by the math, but be advised: this student will not be allowed to continue on to Chem 230 because the prerequisite for Chem 230 is Math 125.*

**Non-Science majors** who do not expect to use science in their career but wish to have an overview of the discipline of chemistry should take:

**Chem 110** Chemistry and Your Environment (3 credits) (no prerequisites)

Students with an AP Chemistry test score of 4 or 5 will receive credit for General Chemistry I and should plan to enroll in General Chemistry II in the spring semester.

## Students considering a major in chemistry

Students showing an interest in chemistry as a possible major should begin immediately with General Chemistry their first year in order to avoid very complex scheduling in their last two years. Chemistry majors are required to complete the math sequence through Calculus II (Math 227). Below are tabulated typical four-year schedules for students with different career goals.

### Typical four-year schedule

	1st year	2nd year	3rd year	4th year
<b>Fall</b>	Gen. Chem	Org Chem	Adv.Inorganic	Biochem**
	Math	Physics	Quant Analysis	or Quant Anal.
	FYS	Biology II**	or Biochem	Capstone I
	Elective-Core	Elective-Core	Elective	Elective
Winter	Elective-Core	Elective-Core	Chem-Elective	
<b>Spring</b>	Gen Chem II	Org Chem	Thermodynam	Chem elect.
	Math	Physics	Chem elect.	Capstone II
	Biology I**	Elective-Core	Elective	Elective
	Elective-Core	Elective-Core	Elective	Elective

\* Workshop (calculus-based) physics is strongly recommended, especially for students who might consider graduate school.

\*\* Required only for a chemistry major with an emphasis in biochemistry. Otherwise these can be taken as electives.

### Possible four-year schedule with Pre-Pharmacy

	1st year	2nd year	3rd year	4th year
<b>Fall</b>	General Chem I	Organic Chem I	Biochemistry I.	Inorg Chem
	Math (Calc I)	Physics	Quant Analysis	Chem elective
	FYS	Biology II	Hum Anatomy	Capstone I
	Language	Psych 150	Speech	
<b>Winter</b>	Hum. core	Cross-cult. core	Biochem. Lab	
<b>Spring</b>	Gen. Chem II	Org. Chem II	Biochemistry II	Instrum. Anal.
	Math (Calc II)	Physics	Human Phys.	Thermodynam
	Biology I	Eng 201	Microbiology	Capstone II
	Language/Core	Economics	Social Sci. core	.

### Possible four-year schedule with Pre-Medicine/Pre-Dental

	1st year	2nd year	3rd year	4th year
<b>Fall</b>	General Chem I	Organic Chem I	Biochemistry I.	Adv. Inorganic
	Math (Calc I)	Physics	Quant Analysis	Thermodynam.
	FYS	Biology II	(Hum Anat/Dent)	Capstone I
	Language	Social Sci. core		
<b>Winter</b>	Hum. core	Cross-cult. core	Biochem. Lab	
<b>Spring</b>	Gen. Chem II	Org. Chem II	Biochemistry II	Quantum Chem
	Math (Calc II)	Physics	Instrum. Anal.	Chem elective
	Biology I	Eng 201	Genetics (lab?)	Capstone II
	Language/Core	Humanities core	Social Sci. core	

### Which Organic Chemistry Should I take?

Students interested in majoring in biology or chemistry or interested in careers in medicine, dentistry, optometry, pharmacy physician assistant and others must take a course in organic chemistry. Pacific offers two, quite different courses and you should think carefully about which one fits your needs. The course description of each is below with some suggestions that should be helpful in your decision.

#### **Chem 240/241 Survey of Organic Chemistry with Laboratory**

*An introduction to the chemistry of the hydrocarbons and their principal derivatives. Meets pre-physical therapy, optometry and nursing requirements. (This course does not meet requirements for the chemistry major, nor does it meet admission standards for pharmacy, dental or medical school.) Students cannot receive credit for both chem. 240 and the 310-series. Prerequisite: Chem 230. 4 hours*

#### **Chem 310/320 Organic Chemistry I & II**

*An integrated study of aliphatic and aromatic chemistry. Emphasis is placed on the mechanistic approach to understanding organic reactions. Prerequisite: Chem 230.*

#### **Chem 311/321 Organic Chemistry Laboratory**

*A laboratory course in organic chemistry concerned with the synthesis, isolation and purification of characteristic organic compounds including and introduction to the*

*qualitative identification of unknown compounds. Co-requisite: Chem 310/320, 1 hour each semester.*

### **Recommendations:**

In making this decision, students and advisors should consider the importance of keeping multiple career options open. Students who might use the chemistry directly in their careers should take the Chem 310/320 sequence. For example, this sequence must be taken by those considering careers in medicine (including physician assistant), dentistry, pharmacy, chemistry, or graduate programs in biology, especially in the physiological, molecular biology, genetics or microbiological areas.

Students selecting Chem 240 Survey of Organic Chemistry normally will not be planning to use the content directly. Rather they will be pre-professional students heading toward optometry or perhaps in the field areas of biology (but not toward graduate school).

Chem 240 is not easier or harder than the Chem 310/320 sequence, but it is completed in one semester. Those students who have a great difficulty with general chemistry are normally best advised to take Chem 240. Those interested in a deeper understanding of organic chemistry will usually take Chem 310/320. Likewise, students who are trying to keep their options open may be well advised to take Chem 310/320 sequence.

If you have any doubt as to which course is appropriate, please talk to the Chemistry Department.

REV 4/09