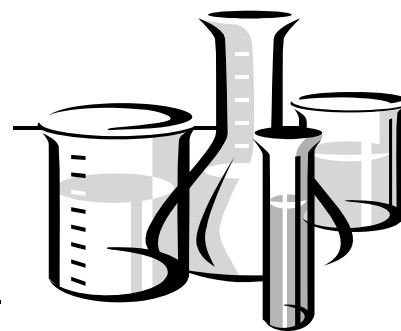


ADVISING INFORMATION

DEPARTMENT OF CHEMISTRY

UNDERGRADUATE PROGRAMS



CONGRATULATIONS...

On considering Chemistry as your major, it is a field that will enable you to find success in many technical areas. Often, Chemistry is referred to as the "Central Science."

We want you to be successful in your chosen field. Success will require both significant effort on your part to learn the basics of chemistry and careful planning for your course of study.

The purpose of this information sheet is to help you develop your personal goals in chemistry and your schedule of classes by focusing on the various programs within the Chemistry Department and the curricular pathways available to you.

PROGRAMS

The Chemistry Department offers six degrees: Bachelor of Science (BS), Bachelor of Science with concentration in Biochemistry, Bachelor of Arts (BA), Bachelor of Arts with concentration in Biochemistry, Bachelor of Arts with concentration in Forensics, a Masters of Science (MS), and a Masters of Science with a Biochemistry concentration. This information sheet will focus on the first five.

The Chemistry BS degree is certified by the American Chemical Society and is recommended for those intending to pursue graduate work or who desire a strong technical background. Senior research is required for this program.

The BA degree without concentration is flexible and is designed for those who are interested in the allied health sciences and in teaching chemistry in a high school.

Prospective high school teachers interested in a physical science teaching credential may meet state requirements using this degree.

The BA degree with a concentration in Biochemistry provides specific coursework in biochemistry, a field that requires a balance of knowledge in chemistry and biology.

Today, many careers make intensive application of Biochemistry:

- Pharmaceutical/ Medicinal Chemistry
- Medicine
- Microbiology
- Physiology
- Genetics
- Basic Research
- Immunology
- Molecular Biology
- Biomedical Management
- Biomedical Instrumentation
- Pharmacology
- Toxicology
- Biotechnology
- Diagnostics
- Clinical Chemistry
- Pharmacy
- Biotechnology

The BA degree with a Concentration in Forensics provides the basic training for an entry-level position in the field of laboratory-based chemical forensics. Today a forensic scientist must have a solid background in Chemistry with

additional coursework in Criminal Justice and Biological Sciences.

ADVISING

Choosing the best program in chemistry for you and the proper sequence of courses in scheduling of classes may require the assistance of a faculty member in chemistry. Chemistry faculty believe in effective academic advising and they work closely with their students.

We urge you to be connected to a departmental advisor as soon as possible. A chemistry advisor will be assigned to you based upon your interest. You will be sent a letter with their contact information soon after filling out the new student profile form. Please make an appointment to meet with your chemistry advisor during your first semester on campus.

TRANSFER STUDENTS

The California State University allows for transfer credit from accredited Colleges and Universities. If you are transferring courses taken at a California Community College and seeking credit, the department may have previously certified the transferability of your chemistry courses. The department maintains a file of Chemistry courses certified; to see this file, please see the administrative assistant in Sequoia 506.

Each transfer student has his/her own unique situation that should be evaluated by an advisor. As you evaluate your own situation, please keep the following in mind.



- Quarter units may be converted to semester units by multiplying by two-thirds. Generally it takes two quarter courses for equivalency to a semester course.
- If you completed a two semester/three quarter organic lecture/lab course for chemistry majors at a two year institution, you will receive credit for Chemistry 24, 25, 124, and in rare cases for Chemistry 125. However, because Chemistry 124 and 125 are upper division courses, you will receive course equivalency credit only for them. Courses taken at a community college can not be given upper division units. You may have to take 3-5 units of additional upper division chemistry courses to fulfill the minimum number of required upper division chemistry for the degree program that you choose. This will provide you with an opportunity to expand and strengthen your chemistry background.
- If you transfer without completing the physics or calculus requirements, you should plan to begin taking the appropriate courses the first semester you enroll. If you delay, you will extend your time at CSUS.



INSTRUMENTATION

You will have an opportunity to gain technical skills working with modern scientific instruments. Upper division chemistry classes are usually small and you have an opportunity to work closely with chemistry faculty. Instrumentation in the Chemistry Department is extensive and students are given ample opportunity to gain "hands on" experiences with these instruments.

Extensive available instrumentation includes a Hewlett-Packard 5890 Series II GC-Mass spectrometer; a Bruker Avance-300 NMR; a Bruker MSL 300MHz wide bore NMR; a Perkin-Elmer 2000 FTIR; a Shimadzu UV-2401 PC spectrometer; an HP 8452A UV-VIS diode array spectrometer; a Shimadzu, RF-5301PC spectrofluorophotometer; Ocean Optics UV spectrometers; a Beckman L2-50 ultracentrifuge; Agilent/HPLC systems; an EPR spectrometer; a Beckman HPLC and system; a Perkin-Elmer atomic absorption spectrometer; Powder XRD; thermoanalyzer; a QuantumCube computational system; several gas chromatographs; and many PC workstations.

RESEARCH

The Chemistry faculty strongly believe that you should participate in basic or applied research and work closely with a faculty in developing the skills and knowledge needed to work on an independent research project. Chemistry majors are strongly encouraged to conduct an independent study of a research project in chemistry. This requirement is met by taking Chemistry 198 (Chemistry 189 may also be used).



When applying for graduate school or an employment position you will find that this experience will make you a more desirable candidate.



FINANCIAL HELP

The Chemistry Department advisors will help you locate financial assistance using the resources of the University. The department also posts local job listings.

The Chemistry Department often has requests for Chemistry tutors. If you are interested in becoming a tutor, you should contact the departmental administrative assistant in Sequoia 506.

The Chemistry Department often hires students as graders for chemistry courses and to assist our Service Center technical staff in preparation of course materials. If you are interested in grading, please let the departmental administrative assistant know. If you want to work in the Chemistry Service Center, please see Barbara Coulombe in Sequoia 429.

SAMPLE PROGRAMS

B.S. Degree Program-Four/Five Year Schedule of Courses

You can finish a B.S. degree in four years if you take courses as outlined on the next page, with calculus (Math 30) taken in the first semester of Freshmen year.

Students who are not properly prepared to take calculus their Freshmen year, or who must work 15-20 hours/week and therefore should only take 10-12 units per semester, should plan to spend at least five years to complete their degree.

B. A. Degree Program: General, Biochemistry, and Forensic Concentration

The general BA, BA with concentration in Biochemistry, and BA with concentration in Forensics require the same common core of science and math courses:

Chemistry 1A and 1B, General Chemistry (10 units)
Chemistry 24, Organic Lecture I (3 units)
Chemistry 25, Organic Laboratory I (3 units)
Chemistry 124, Organic Lecture II (3 units)

Chemistry 31, Quantitative Analysis (4 units)
Physics 5A and 5B, General Physics (8 units)
Math 30 and 31, Calculus I and II (8 units)

The programs differ in upper division chemistry requirements. Please refer to the university catalog for details.

BA General		BA with Concentration in Biochemistry		BA with Concentration in Forensics	
Freshmen		Freshmen		Freshmen	
1st Semester	2nd Semester	1st Semester	2nd Semester	1st Semester	2nd Semester
Chem 1A (5)	Chem 1B (5)	Chem 1A (5)	Chem 1B (5)	Chem 1A (5)	Chem 1B (5)
English 1A (3)	Math 31 (4)	English 1A (3)	Math 31 (4)	English 1A (3)	Math 31 (4)
Math 30 (4)	English 20 (3)**	Math 30 (4)	Bio I (5)	Math 30 (4)	English 20 (3)**
G.E. (3)	G.E. (3)	G.E. (3)		G.E. (3)	G.E. (3)
Sophomore		Sophomore		Sophomore	
1st Semester	2nd Semester	1st Semester	2nd Semester	1st Semester	2nd Semester
Chem 31 (4)	Chem 24 (3)	Bio II (5)	Chem 124 (3)	Chem 31 (4)	Chem 24 (3)
Phys 5A (4)	Phys 5B (4)	Chem 24 (3)	Chem 25 (3)	Phys 5A (4)	Phys 5B (4)
Math 32 (4)	G.E. (3-6)	Phys 5A (4)	Phys 5B (4)	CJ 1 (3)	G.E. (3-6)
G.E. (3)		English 20 (3)	Chem 31 (4)	G.E.	
Junior		Junior		Junior	
1st Semester	2nd Semester	1st Semester	2nd Semester	1st Semester	2nd Semester
Chem 124 (3)	Chem 140B (3)	Chem 160A (3)	Chem 160B (3)	Chem 124 (3)	Chem 142 (4)
Chem 140A (3)	Chem 141 (3)	Chem 162 (3)	Chem 142 (4)	Chem 25 (3)	Chem 125 (3)
Chem 25 (3)	Electives/ G.E.	UD Bio Course * (2-4)	Chem 164 (3)	Electives/G.E.	Electives/G.E.
Electives/ G.E.		G.E.	UD Bio Course* (2-4)		
			G.E.		
Senior		Senior		Senior	
1st Semester	2nd Semester	1st Semester	2nd Semester	1st Semester	2nd Semester
Electives		UD Bio Courses		Chem 161 (3)	Electives (6)
General Education		General Education		Chem 162 (3)	G.E.
Research		Research		C.J. 146 (3)	Research
				Elective	
				G.E.	
				Research	

*Two courses total are required and are chosen from:

Biological Sciences 121, Cellular Physiology (3 units)
Biological Sciences 131, Systemic Physiology (4 units)
Biological Sciences 139, General Microbiology (4 units)
Biological Sciences 180, Molecular Biology Lecture (2 units)
Biological Sciences 184, General Genetics (3 units)

**NOTE: English 20 is a prerequisite for all Upper Division Laboratories

B. S. Degree Program-General Chemistry

Schedule of Courses

If you are not prepared to take Math 30 in your first semester as a Freshman, then you should plan to take Physics 11C concurrently with Chem 140A. Physics 11C is a prerequisite for Chem 140A; however, the physical chemistry faculty will allow you to take Physics 11C concurrently with permission of the instructor. A schedule of courses for this situation is located in the right column of the following table.

THE B.S. DEGREE PROGRAM WORKS BEST FOR STUDENTS IF THEY TAKE CHEM 140A AND 141 IN THEIR JUNIOR YEAR.

For Students prepared to take Math 30 their first semester		For Students not prepared to take Math 30 their first semester	
Freshmen		Freshmen	
1st Semester	2nd Semester	1st Semester	2nd Semester
Chem 1A (5)	Chem 1B (5)	Chem 1A (5)	Chem 1B (5)
Math 30 (4)	Math 31 (4)	Math 29 (4)	Math 30 (4)
English 1A (3)	Phys 11A (4)	English 1A (3)	English 20 (3)*
G.E. (3)	English 20 (3)*	G.E. (3)	G.E. (3)
Units: (15)	Units: (16)	Units: (15)	Units: (15)
Sophomore		Sophomore	
1st Semester	2nd Semester	1st Semester	2nd Semester
Chem 31 (4)	Chem 24 (3)	Chem 31 (4)	Chem 124 (3)
Math 32 (4)	Phys 11C (4)	Math 31 (4)	Chem 25 (3)
Phys 11B (4)	G.E. (9)	Chem 24 (3)	Phys 11B (4)
G.E. (3)	Units: (16)	Phys 11A (4)	Math 32 (4)
Units: (15)		Units: (15)	G.E. (3)
			Units: (17)
Junior		Junior	
1st Semester	2nd Semester	1st Semester	2nd Semester
Chem 25 (3)	Chem 140B (3)	Chem 125 (3)	Chem 140B (3)
Chem 124 (3)	Chem 141 (3)	Chem 140A (3)	Chem 141 (3)
Chem 140A (3)	Chem 125 (3)	Phys 11C (4)	G.E. (6)
G.E. (3)	G.E. (3)	G.E. (6)	Elective (3)
Elective (3)	Elective (3)	Units: (16)	Units: (15)
Units: (15)	Units: (15)		
Senior		Senior	
1st Semester	2nd Semester	1st Semester	2nd Semester
Chem 110 (4)	Chem 133 (4)	Chem 110 (4)	Chem 133 (4)
Chem 110L (2)	G.E. (9)	Chem 110L (2)	G.E. (6)
Chem 160A (3)	Chem Electives (3)	Chem 160A (3)	Chem Electives (3)
Chem. Electives (3)	Units: (16)	G.E. (6)	Elective (3)
G.E. (3)		Units: (15)	Units: (16)
Units: (15)			

* NOTE: English 20 is a prerequisite for all Upper Division laboratories

B. S. Degree Program–Biochemistry Concentration

Schedule of Courses

BS in Biochemistry	
Freshmen	
1st Semester	2nd Semester
Chem 1A (5) English 1A (3) Math 30 (4) G.E. (3)	Chem 1B (5) Math 31 (4) Bio I (5)
Sophomore	
1st Semester	2nd Semester
Bio II (5) Chem 24 (3) Phys 5A (4) English 20 (3)**	Chem 124 (3) Chem 25 (3) Phys 5B (4) Chem 31 (4)
Junior	
1st Semester	2nd Semester
Chem 160A (3) Chem 162 (3) Chem 125 (3) G.E.	Chem 160B (3) Chem 142 (4) Chem 164 (3) G.E.
Senior	
1st Semester	2nd Semester
Bio 184 (4) Chem elective (3) G.E.	Chem 141 (3) Bio elective (3)* G.E.

*Two courses total are required and are chosen from:
Biological Sciences 121, Cellular Physiology (3 units)
Biological Sciences 131, Systemic Physiology (4 units)
Biological Sciences 139, General Microbiology (4 units)
Biological Sciences 180, Molecular Biology Lecture (2 units)
Biological Sciences 184, General Genetics (3 units)

**NOTE: English 20 is a prerequisite for all Upper Division Laboratories

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