CHEMISTRY

Natural and Applied Sciences Division

Wanda Garner, Division Dean

Division Office, Room 701

Jason Camara, Program Chair, (831) 477- 5621

Counselor: (831) 479-6385 or (831) 479-6225 for appointment

Watsonville Counselor: (831) 477-5134

Call (831) 479-6328 for more information

http://www.cabrillo.edu/programs

Information for Chemistry Majors

Chemistry is the study of the properties, composition and transformations of all material substances. It is often called the "central science" since it draws from mathematics and physics and forms a necessary background to the study of the earth sciences and all the biological disciplines, including the various medical professions. A chemistry major is considered excellent preparation for medical school.

As pure scientists, chemists seek to understand ever more complex substances in greater detail. As applied scientists, chemists contribute to the creation and development of thousands of the products that support our complex society. Chemistry is a profoundly experimental science and much of a student's time will be spent in the laboratory.

A chemistry major usually transfers to a four-year institution to complete a bachelor's degree. Many also go on to earn Masters or Ph.D.s, since advanced degrees generally lead to more rewarding careers. Cabrillo's chemistry program is articulated with those of the UC and CSU systems and includes the standard courses needed to complete the first two years of the major.

Verification of prerequisites will be required. Prerequisites for courses in this department are computer enforced. Students should be sure their records have been entered into the Cabrillo computer system before attempting to enroll.

MODEL PROGRAM FOR CHEMISTRY

The following model program fulfills requirements for the A.S./A.A. Degree in Chemistry at Cabrillo College. Specific lower division major preparation at four-year public institutions in California can be found at www. assist.org. Please see a counselor for advisement for transfer to any four-year institution.

The following core courses are required for transfer for all chemistry majors. (Choose 39 units from the core courses: at least 20 units of CHEM courses)

Core Courses		**Units**
CHEM 1A	General Chemistry	5
CHEM 1B	General Chemistry	5
+CHEM 5	Quantitative Analysis (spring, odd yrs. only)	4
++CHEM 12A	Organic Chemistry (fall only)	3
++CHEM 12AL	Organic Chemistry Laboratory (fall only)	2
+CHEM 12B	Organic Chemistry (spring only)	3
+CHEM 12BL	Organic Chemistry Laboratory (spring only)	2
Foreign Language*		8-12
MATH 5A	Analytic Geometry & Calculus I	4
MATH 5B	Analytic Geometry & Calculus II	4
MATH 5C	Analytic Geometry & Calculus III	4
+MATH 6	Introduction to Linear Algebra (spring only)	3
MATH 7	Introduction to Differential Equations	3
PHYS 4A	Physics for Scientists and Engineers	5
++PHYS 4B	Physics for Scientists and Engineers (fall only)	5
+PHYS 4C	Physics for Scientists and Engineers (spring only)	5
++PHYS 4D	Modern Physics (fall even only)	3

*The student should consult the catalog of the intended transfer institution concerning the necessity or appropriateness of these courses.

Associate in Science Degree in Chemistry

General Education	21
Chemistry Core (20 units must be CHEM courses)	39
Total for A.S. Degree in Chemistry.	60

Associate in Arts Degree in Chemistry

General Education	30
Chemistry Core (20 units must be CHEM courses)	20-24
Electives	6-10
Total for A.A. Degree in Chemistry	60

Chemistry Courses

CHEM 1A
General Chemistry

5 units; 3 hours Lecture, 6 hours Laboratory

Prerequisite: CHEM 2 or equivalent or high school chemistry with grade "B" or better and MATH 152 or equivalent.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

General chemical principles including structure of matter, chemical equations and bonding, gases, solutions, periodic law, acids and bases, and chemical equilibrium.

Transfer Credit: Transfers to CSU. Transfers to UC. CAN CHEM 2.

CHEM 1B
General Chemistry

5 units; 3 hours Lecture, 6 hours Laboratory

Prerequisite: CHEM 1A.

General chemical principles to include a review of equilibrium, acid/base chemistry, electrochemistry, chemical thermodynamics, structure, nomenclature and properties of coordination compounds, nuclear chemistry, introduction to organic chemistry.

Transfer Credit: Transfers to CSU. Transfers to UC. CAN CHEM4.

CHEM 2
Introductory Inorganic Chemistry

4 units; 3 hours Lecture, 3 hours Laboratory

Prerequisite: MATH 152.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers fundamental principles of inorganic chemistry. Course topics include chemical calculations, classification of matter, the atomic and kinetic theories of matter and the mole concept. Prepares students for CHEM 1A.

Transfer Credit: Transfers to CSU. Transfers to UC with conditions: No credit if taken after CHEM 1A.

CHEM 5
Quantitative Analysis

4 units; 2 hours Lecture, 6 hours Laboratory

Prerequisite: CHEM 1B.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Presents quantitative chemical determinations using classical (gravimetric, volumetric) and instrumental (electrochemical, spectrochemical, polarimetric, chromatographic) methods; data obtained from these experiments will then be analyzed utilizing statistical methods. Designed for any scientific discipline that requires the knowledge and skills necessary to perform quantitative chemical determinations.

Transfer Credit: Transfers to CSU. Transfers to UC. CAN CHEM12.

CHEM 10
Concepts of Chemistry

4 units; 3 hours Lecture, 3 hours Laboratory

Recommended Preparation: MATH 154; Eligibility for ENGL 100 and READ 100.

Presents an introduction to atoms, molecules, reactions, nomenclature, energy and how these explain our material world. Examines the chemical concepts most useful for understanding contemporary life--food, water, artists' materials, nuclear reactions, modern chemical industry and its impact on our environment.

Transfer Credit: Transfers to CSU. Transfers to UC with conditions: No credit for CHEM 10 if taken after CHEM 1A.

CHEM 12A
Organic Chemistry

3 units; 3 hours Lecture

Prerequisite: CHEM 12AL or concurrent enrollment and CHEM 1B.

The lecture portion of the first semester of the year-long organic chemistry course designed for chemistry majors and pre-professional medical and biology majors. Includes stereochemistry, mechanisms, reactions and spectroscopic studies of aliphatic compounds. (CHEM 12AL strongly recommended.)

Transfer Credit: Transfers to CSU. Transfers to UC.

CHEM 12AL
Organic Chemistry Lab

2 units; 6 hours Laboratory

Prerequisite: CHEM 1B.

Corequisite: CHEM 12A.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Presents an introduction to microscale laboratory and instrumental techniques covering isolation, synthesis and identification of many classes of organic compounds.

Transfer Credit: Transfers to CSU. Transfers to UC.

CHEM 12B
Organic Chemistry

3 units; 3 hours Lecture

Prerequisite: CHEM 12A.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers mechanisms, synthesis and spectroscopy of aliphatic and aromatic alcohols, amines, carbonyl and carboxyl compounds, carbohydrates and proteins. (CHEM 12BL optional)

Transfer Credit: Transfers to CSU. Transfers to UC.

CHEM 12BL
Organic Chemistry Laboratory

2 units; 6 hours Laboratory

Prerequisite: CHEM 12B or concurrent enrollment in CHEM 12B.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Presents multi-step synthesis and identification of unknown mixtures including chemical, physical and spectroscopic studies of aliphatic and aromatic alcohols, aldehydes, ketones, acids and other classes of organic compounds. Includes GC and IR. Spring semester only.

Transfer Credit: Transfers to CSU. Transfers to UC.

CHEM 30A
Inorganic Chemistry for Health Occupations

4 units; 3 hours Lecture, 3 hours Laboratory

Prerequisite: MATH 154.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Covers chemical concepts such as atomic structure, acids and bases, salts, buffers, electrolyte systems and nuclear chemistry. Appropriate for students interested in physiology and paramedical fields.

Transfer Credit: Transfers to CSU. CAN CHEM6.

CHEM 30B
Introductory Organic Chemistry and Biochemistry for Health Occupations

4 units; 3 hours Lecture, 3 hours Laboratory

Prerequisite: MATH 154; high school chemistry or CHEM 30A or CHEM 2.

Survey of the major classes of organic and biochemical compounds as they relate to the chemistry of life processes. Designed for students preparing for the Dental Hygiene program or a four year nursing degree.

Transfer Credit: Transfers to CSU. CAN CHEM8.

CHEM 32
Chemistry for the Allied Health Major

5 units; 3 hours Lecture, 6 hours Laboratory

Prerequisite: MATH 154.

Recommended Preparation: Eligibility for ENGL 100 and READ 100.

Presents a one semester survey of general and organic chemistry as preparation for careers in the allied health sciences. It is not appropriate for premed, dental or veterinary students nor is it intended for allied health students requiring two semesters of chemistry.

Transfer Credit: Transfers to CSU: *CHEM 32 is a one-semester alternative that satisfies the CHEM 30A/CHEM 30B two semester sequence required for students transferring to some 4-year Nursing Programs - please see a counselor or check www.assist.org for more information. CHEM 32 also satisfies the prerequisite requirement for BIO 5 and BIO 6.