178. Neurobiology with Laboratory. *Ms. Parfitt.* Introduction to the biology of the nervous systems of vertebrates and invertebrates. Emphasis on cellular and molecular approaches. The ionic basis of electrical signaling in excitable cells, the physiology and biochemistry of synaptic transmission, the molecular mechanisms of learning and memory and selected topics in the field. Prerequisite: 41C. Each spring.

NEUR 102. Neuroethology: Mechanisms of Behavior with Laboratory. *Ms. Levin.* Prerequisites: BIOL 40 and either BIOL 41C or 41E. Spring 2010; offered alternate years.

NEUR 103. Introduction to Neuropharmacology. *Ms. Parfitt.* Prerequisite: BIOL 41C. Fall 2009; offered alternate years.

NEUR 130. Vertebrate Sensory Systems with Laboratory. *Mr. Johnson.* Prerequisite: BIOL. 41C. Each spring.

Other Courses for the Major

189. Selected Topics in Biology. *Staff.* Seminars, discussions and/or laboratory exercises conducted as small discussion groups in specialized topics not offered in formal courses and of mutual interest to students and staff. Prerequisite: permission of instructor. Course or half-course. May be repeated. Each semester.

191. Senior Library Thesis. *Staff.* Design of a research protocol to answer an original question. Written in the form of a grant proposal. Open to students whose preliminary written project proposals have been approved by the department. Preliminary proposals due one week prior to pre-enrollment in the preceding semester. Half-course. Each semester.

194A,B. Senior Experimental Thesis. *Staff.* A two-semester laboratory or field project that addresses an original question. Open to students whose written preliminary project proposals have been approved by the department. Preliminary proposals due one week prior to pre-enrollment in the spring of the junior year. 194A, half-course, first semester; 194B, full-course, second semester.

198. Summer Reading and Research. *Staff.* May consist of a reading program in a specific field of biology and/or a field or laboratory research project conducted under faculty member's supervision. Open to any student who receives faculty and departmental approval. Course or half-course.

199. Independent Study/Research in Biology. *Staff.* Directed independent research under the supervision of a faculty member. Open to students whose written project proposals have been approved by the department; proposals due one week before pre-enrollment. Course or half-course. Each semester.

Chemistry Department

Professor Edward J. (E.J.) Crane III, department chair

Professors Garza-López, Grieman, O'Leary, Oxtoby, Selassie
Associate Professors Crane, Johal, Taylor
Assistant Professor Sazinsky
Visiting Assistant Professors Arora, Nevárez
Laboratory Coordinators Vasquez, Yu
Robbins Postdoctoral Fellow Lopez
Postdoctoral Fellow Moersch

The Chemistry Department provides its students with a thorough education in the fundamental processes of the chemical world to foster creative and critical thinking. The curriculum introduces students to an understanding of chemical phenomena, structure, properties and transformations at the atomic and molecular levels. A collegial and supportive environment distinguishes the student-faculty interaction in many contexts, including the class-

room and laboratory. It is this experience that prepares students for a variety of professional pursuits and enables them to learn beyond the confines of the College throughout their lifetime and to be constructive and contributing citizens of the community.

The Chemistry Department occupies the recently renovated and well-equipped Seaver Chemistry Laboratory. Students have the opportunity for hands-on experience with modern instrumentation and sophisticated software within the context of their coursework and independent research projects as early as their first year. In addition to extensive instrumentation and computational facilities, other resources for experimental and theoretical work include ready access to the primary chemical literature through online and print holdings in the libraries of The Claremont Colleges.

The core curriculum for chemistry majors is designed to provide students with technical and analytical skills and the habits of mind necessary for independent research. The capstone experience is the senior thesis, chosen by the student to be either a critical literature review of a topic of current interest and significance or based on research conducted with a faculty member. Both options culminate with an oral presentation and a written thesis. Most majors work with chemistry faculty to fulfill their senior thesis requirement with the experimental research option. The senior thesis underscores the high degree of thought and creativity involved as these studies often contribute to peer-reviewed publications in the primary literature.

The Chemistry Major provides a solid foundation for many areas of further study, such as graduate work in chemistry, the life sciences, environmental studies, public health, forensic science and oceanography. It has enabled students to succeed in a variety of professions, including education, industry, medicine, business and law.

For more information, visit the Web page at *www.chemistry.pomona.edu*.

Requirements for the Major in Chemistry

Courses for the Chemistry Major must be taken for letter grade.

There are several tracks leading to the degree in chemistry. All tracks include the following core courses: CHEM 1A, B or 51; 110A,B; 158B; 161; MATH 30, 31; PHYS 51A, B or equivalent.

The tracks that follow require the additional courses listed.

Chemistry: 158A; 162; 191A, B; MATH 32 or 107; two elective course credits chosen from chemistry courses numbered above 100

Biochemistry: 115; 158A; 191A, B; MATH 32 or 107; two elective course credits chosen from chemistry courses numbered above 100 (180 recommended)

Geochemistry: 191A, B; GEOL 20 (with lab), 127, 110 or 115, and 181 or 183 or 185; and one elective in geology

Chemical Engineering: 158A; MATH 32 or 107, 60; HM ENGR 82 and participation in the HM Engineering Clinic for two semesters. Both oral and written presentations of the student's contribution to the clinic project are also required. Enrollment in CHEM 162 is strongly recommended but not required.

Chemistry courses from the other Claremont Colleges may be selected for chemistry electives. Students may substitute one appropriate biology, geology, mathematics or physics course for one of the two chemistry elective course credits. Students wishing to make elective substitutions should consult with their academic advisor or the chair of the department. A final requirement is that junior and senior chemistry majors are expected to attend three-fourths of the departmental seminars and senior thesis presentations.

The senior capstone exercise is the Senior Thesis (191A, B) with two options: a critical literature review or experimental research in collaboration with a faculty member. Collaborative research fellowships are available to students at all levels in chemistry for a 10-week period in the summer. Research opportunities are also available during the academic year.

The Chemistry Department participates in the interdepartmental programs of molecular biology and neuroscience; in addition, it also offers a Chemistry/Public Policy Analysis Major in conjunction with the Public Policy Analysis Program.

Pre-Professional Program in Chemistry and Biochemistry. Students planning to pursue advanced studies in graduate school should, in consultation with their advisors, choose additional courses that will strengthen their preparation in the area of interest. This curriculum has been approved by the American Chemical Society Committee for Professional Training of Chemists. Students who wish to receive certification from the American Chemical Society should include CHEM 115, 162, JS CHEM 128 and 130L or HM CHEM 104 with laboratory in their course of study.

Requirements for a Minor in Chemistry

For the Chemistry Minor, students must complete a minimum of six chemistry courses, including CHEM 1A, B (or 51); 110A, B; 158A or 158B; and one upper-division elective. The elective may be either a full course or two half-courses. Students majoring in environmental analysis with the chemistry emphasis, or molecular biology, may not minor in chemistry. Courses taken for completion of the minor must be taken for a letter grade.

Preparation for General Chemistry

Chemistry is a quantitative science and thus reasonable ability with algebra and problem-solving is needed for satisfactory performance in general chemistry. Students whose SAT math score is lower than 550 are strongly recommended to improve their mathematics skills before enrolling in 1A, B. 51 is intended for students with two or more years of high school chemistry; the score on a placement examination is the normal selection criterion.

Courses

Chemistry (CHEM) courses satisfy Area 4 of the Breadth of Study Requirements.

1A,B. General Chemistry with Lab. *Mr. Arora, Mr. Crane, Mr. Garza-López, Mr. Grieman, Mr. Taylor, Ms. Yu, Staff.* An introduction to basic thermodynamic, kinetic and structural principles; ionic equilibria; and the physical and chemical properties of the more common chemical elements and their compounds. Laboratory work is coordinated with the lecture and emphasizes quantitative analytical and instrumental techniques and molecular modeling. Interactive computing is an integral part of the second semester. High-school chemistry recommended. 1A, each fall; 1B, each spring.

51. General Chemistry with Lab—Accelerated. *Mr. Arora, Mr. Johal.* Accelerated introductory course for well-prepared students. Ionic equilibrium, atomic structure, molecular bonding and structure, chemical thermodynamics and chemical kinetics. Laboratory work emphasizes quantitative analytical and instrumental techniques and molecular modeling. Interactive computing is an integral part of the course. Prerequisite: two or more years of high school chemistry and a passing score on the placement examination. Each fall.

106. Environmental Chemistry. *Mr. Oxtoby, Mr. Taylor.* An examination of environmental systems such as the atmosphere and the oceans from a molecular perspective. The course will critically examine chemical sources of environmental pollution and the means for remediation of these problems. Prerequisites: 1A, B or 51. Each spring.

110A, B. Organic Chemistry with Lab. *Mr. Arora, Ms. Nevárez , Mr. O'Leary, Mr. Vasquez.* A study of organic compounds, including synthesis and reaction mechanisms. Laboratory includes both synthesis and qualitative organic analysis. Prerequisite: 1A,B or 51. 110A, each fall; 110B, each spring.

115. Biochemistry with Lab. *Mr. Crane, Mr. Lopez, Ms. Negritto, Mr. Sazinsky.* Biological molecules considered in terms of their structure and roles in the dynamic processes by

which energy and information are received, interconverted and transmitted in order to maintain life. Laboratory emphasizes techniques and instrumentation used to study the nature of biochemical molecules and processes. Prerequisite: 110A,B. Each semester.

158A. Physical Chemistry. *Mr. Grieman.* Quantum mechanics with applications to chemical bonding and molecular spectroscopy, introduction to statistical mechanics and kinetic gas theory. Prerequisites: 1A, B or 51; MATH 32 or 107; PHYS 51A, B. Each fall.

158B. Physical Chemistry. *Mr. Johal.* Study of chemical thermodynamics, chemical kinetics, molecular spectroscopy and molecular modeling. Prerequisite: 1A,B or 51; MATH 31; PHYS 51A,B. Each spring.

161. Advanced Analytical Chemistry and Laboratory. *Mr. Taylor, Ms. Yu.* Study of modern instrumental methods of analysis with emphasis on spectroscopic, separation and electro-analytical methods. Laboratory experience includes work with many of these modern instrumental methods and an examination of the analysis of variance. Prerequisite: 110A. Each fall.

162. Advanced Physical Chemistry with Laboratory. *Mr. Arora, Mr. Garza-López, Mr. Johal.* Advanced physical chemistry topics chosen from the areas of statistical thermodynamics, group theory, chemical kinetics, molecular modeling and solid state chemistry. Laboratory emphasis on modern instrumental methods, including molecular spectroscopy, powder X-ray diffraction, nuclear magnetic resonance, chemical kinetics and gas-phase adsorption. Prerequisite: 158A. Each spring.

172. NMR Spectroscopy. *Mr. O'Leary.* Examines fundamental concepts in nuclear magnetic resonance with a focus on spectroscopic techniques used for organic structure elucidation and conformational analysis. Hands-on experience with data collection and analysis. Prerequisite: 110A. Letter grade only. Half-course. Spring 2010.

174. Bio-Organic Chemistry. *Ms. Selassie.* Basis for a clearer understanding of the structures of organic compounds, the mechanisms of organic reactions and how they fuse together at the molecular and cellular level. Examples drawn from drug and pesticide design, as well as environmental toxicology. Interactive computing using specific software is an integral part of the course. Prerequisite: 110A, B. Letter grade only. Half course. Fall 2009; offered alternate years.

175. Introduction to Medicinal Chemistry with Computational Lab. *Ms. Selassie.* To be announced.

180. Advanced Biochemistry. *Mr. Sazinsky.* An examination of biochemical catalysis with an emphasis on enzyme mechanisms and techniques used in their elucidation. Current primary literature is studied to gain an understanding of what is known and perhaps more importantly, not known, about catalysis in chemistry and enzymology. Prerequisite: 115. Spring 2010.

185. Soft Nanomaterials. *Mr. Johal.* This course is concerned with the self-assembly of functional materials at the nano-scale. The first half of the course covers the fundamentals of surface chemistry, monolayer formation and the chemistry of colloidal systems; the second half highlights nano-fabrication methods used to assemble complex nanomaterials for applications in biophotonics, chemical sensing, optics and electronics. Prerequisites: 110A, B; MATH 31; PHYS 51A,B. Half-course. Spring 2010.

187. Proteins and Enzymes. *Mr. Lopez.* An in-depth view of protein structure and enzyme catalysis and how protein structure and properties are linked to biological function. Topics include chemical properties of polypeptides, protein biosynthesis, post-translational modifications, protein-protein interactions, structure and function relationships, evolutionary and genetic origins of proteins and enzyme kinetics and mechanisms. This course makes use of bioinformatics tools available over the internet. Prerequisite: 115; 158B recommended. Fall 2009.

191A,B. Senior Thesis. *Mr. Garza-López.* The thesis requirement can be satisfied in one of two ways, beginning in the second semester of the junior year or in the first semester of the senior year: 1) The student writes a critical review of a topic of current interest and

significance, or 2) the student writes a thesis describing experimental research conducted in the laboratory of a faculty member. For 191A: students writing a critical review select a topic and conduct library research; students writing an experimental thesis continue with laboratory work normally initiated through summer research or 199. In both cases, students submit an abstract of their thesis for departmental review. For 191B: students begin writing the thesis and present it, or parts of it, orally at a departmental seminar. Prerequisite: permission of department chair. P/NC only for 191A; letter grade only for 191B. Half-course. Each semester.

99/199. Reading and Research: Selected Topics in Chemistry. *Staff.* Advanced reading and/or laboratory techniques in chemistry, usually by means of student-faculty collaborative research in the junior or senior year. Prerequisite: permission of instructor. 99, lower-level; 199, advanced work. Course or half-course. May be repeated. Each semester. (Summer Reading and Research taken as 98/198.)

Available at the Other Claremont Colleges

HM 104. Inorganic Chemistry
HM 110. Inorganic Chemistry Lab
JS 118. Enzymatic Roles of Metals in Biology
JS 119. Natural Products Chemistry
JS 128. Inorganic Chemistry
JS 130L. Inorganic Synthesis Laboratory
HM 161. Classical and Statistical Mechanics
HM 166. Industrial Chemistry
HM 168. X-Ray Crystallography
HM 173. Advanced Organic Chemistry: Pericyclic Reactions
HM 182. Chemistry in Living Systems
HM 184. Methods in Biochemistry

Chicano/a-Latino/a Studies Department

Associate Professor Rita Alcalá, department chair

Professors Buriel, Calderón (PZ), Tinker Salas
Associate Professors Alcalá (SC), Ochoa, Pantajoa (PZ), Soldatenko (PZ)
Assistant Professor Summers Sandoval
Lecturers Botello (CMC), Gálvez (CMC)

Chicano/a-Latino/a studies is concurrently a multidisciplinary and interdisciplinary field of academic inquiry broadly relating to people of Latin American descent within the hemisphere, in particular within the United States and the wider diaspora. Chicano/a-Latino/a studies is the "umbrella name" for distinct and important academic and critical inquiries which began to converge in the last 20 years. Chicano/a-Latino/a studies emerged in the academy as a product of educational and social movements of the 1960s. These movements led to the initial creation of the program here at The Claremont Colleges in 1969, making our program the second-oldest in the nation. More recently, Chicano/a-Latino/a studies has emerged as a field of inquiry relating to Latin Americans in the hemisphere and has been the site for work seeking to transcend the gaps between area studies and ethnic studies.

As a multidisciplinary and interdisciplinary field, Chicano/a-Latino/a studies contributes to every and all fields in the humanities and social sciences, including professional programs such as education, social work, medicine and law. Courses in Chicana/o-