

# CHEMISTRY AND BIOCHEMISTRY

Chemistry and Biochemistry Department (<http://www.csuchico.edu/chem/>)

Science Building 357A

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Chair: Christopher J. Nichols

## Insight

Chemistry is a part of everything known about the world and beyond. There are chemists, biochemists, and chemical technicians working to prepare materials, analyze evidence, create new substances, and answer the seemingly unanswerable questions that are presented each day. The Department of Chemistry and Biochemistry provides the top-notch knowledge and experience needed to embark on a long and successful academic or professional career in any of the major branches of chemistry—organic, inorganic, analytical, physical, chemical education, materials, and biochemistry.

The bachelor's degrees in chemistry and biochemistry include a broad selection of courses in the sciences and mathematics that provide an excellent background for careers in the wide-ranging areas of science or academia. They also prepare students to advance to graduate and professional schools, especially in medicine, dentistry, and pharmacy. With courses prescribed by American Chemical Society guidelines, students can be certified as professional chemists and awarded the American Chemical Society certificate in chemistry upon successful completion of course requirements.

The department also offers a chance for students to carry out undergraduate research in collaboration with faculty in the Chemistry Summer Research Institute (CSRI) and receive a stipend for 10 weeks of full-time research. Since 2000, CSRI has supported the efforts of over 150 students, who have conducted research in all the major branches of chemistry and worked on cutting-edge cross-disciplinary projects.

## Experience

The Department of Chemistry and Biochemistry has chemistry faculty, facilities, and curriculum approved by the Committee on Professional Training of the American Chemical Society, which is a clear testament to the superior quality of its programs and graduates—a testament that will resonate with anyone in the field.

The department's permanent faculty hold PhDs in chemistry or biochemistry, representing all major areas of the field, and smaller class sizes allow students to get hands-on learning and experimentation experience in all the typical analyses that chemists perform and training on equipment used in modern, professional labs. Additionally, opportunities for individual research projects are available for upper-division students, granting them real-world research experience on a specialized subject that fits their interests.

The department is housed in the newly completed Science Building, which is the most state-of-the-art facility on campus and one of the most visionary buildings within the 23-campus California State University system. It includes 10 teaching laboratories, four research laboratories, and several specialized instrument rooms. With studio labs, active-

learning classrooms, and professional quality undergraduate and graduate research spaces, students are immersed in experiential learning beginning with their first semester.

## Outlook

A bachelor's degree in chemistry or biochemistry is the minimum requirement for starting a career as a chemist or biochemist, and graduate training is necessary for most research and college teaching positions.

A substantial number of chemists and biochemists are involved in research and development, extending scientific knowledge and creating new products in industries including pharmaceuticals and biotechnology. Others work in manufacturing, chemical analysis, forensics, or environmental laboratories; or work as teachers, industry and government consultants, or marketing or sales representatives.

The demand for pollution control, improved health care programs, industrial products, net-zero emissions energy technologies, and much more will continue to provide opportunities for chemists and biochemists. With such demand, larger enrollments in chemistry education are expected and the need for chemists and biochemists to teach at universities, community colleges, and high schools will increase. The Department of Chemistry and Biochemistry at California State University, Chico is one of only eight in the entire CSU system to have a degree program for future chemistry teachers approved by the California Commission on Teacher Credentialing. Plus, the University has financial incentives for future science teachers that can pay for most college expenses.

The department is uniquely poised to make significant contributions to the training of future scientists, engineers, health practitioners, and educators at all levels. When chemistry and biochemistry students graduate from Chico State, they have a multifaceted education that has prepared them to compete and succeed in the finest graduate programs, professional schools, and the full array of field-related career settings.

## Programs Undergraduate

### Bachelor's

- Biochemistry BS (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/chemistry-biochemistry/biochemistry-bs/>)
- Chemistry BA (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/chemistry-biochemistry/chemistry-ba/>)
- Chemistry BS (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/chemistry-biochemistry/chemistry-bs/>)

### Minors

- Biochemistry Minor (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/chemistry-biochemistry/biochemistry-minor/>)
- Chemistry Minor (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/chemistry-biochemistry/chemistry-minor/>)

### Certificates

- American Chemical Society Certificate in Chemistry (<https://catalog.csuchico.edu/colleges-departments/college-natural->

sciences/chemistry-biochemistry/american-chemical-society-certificate-chemistry/)

### Credentials

- Science with a Concentration in Chemistry Single Subject Matter Preparation Program (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/chemistry-biochemistry/science-concentration-chemistry-single-subject-matter-preparation-program/>)

### Pre-Professional

- Chemistry Pre-Professional Programs (<https://catalog.csuchico.edu/colleges-departments/college-natural-sciences/chemistry-biochemistry/chemistry-pre-professional-programs/>)

See Course Description Symbols and Terms (<https://catalog.csuchico.edu/academic-standards-policies/course-description-symbols-terms/>) for an explanation of course description terminology and symbols, the course numbering system, and course credit units.

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#### CHEM 100 Chemistry and Current Issues 3 Units GE

**Typically Offered:** Fall and spring

Designed for non-science majors, this course will introduce students to some of the fundamental concepts of chemistry and illustrates how they apply to important contemporary issues, including nuclear power, water purification, alternative energy, climate change, and foods and drugs. 2 hours activity, 2 hours lecture. (001819)

**General Education:** Physical Science (5A)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 3 units

**Course Attributes:** Lower Division

#### CHEM 107 General Chemistry for Applied Sciences 4 Units GE

**Prerequisite:** GE Mathematical Concepts/Quantitative Reasoning (2) Ready, Intermediate Algebra.

**Typically Offered:** Fall and spring

A survey of the principles of chemistry, primarily for students in agriculture, industry and technology, and pre-nursing. 3 hours laboratory, 3 hours lecture. (001826)

**General Education:** Laboratory (5C); Physical Science (5A)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 4 units

**Course Attributes:** Lower Division

#### CHEM 108 Organic Chemistry for Applied Sciences 4 Units GE

**Prerequisite:** CHEM 107 or CHEM 111 or equivalent.

**Typically Offered:** Fall and spring

A survey of organic chemistry emphasizing the structure, properties, and reactions of all major functional groups of organic molecules. Not applicable towards a degree in chemistry or biochemistry. 3 hours laboratory, 3 hours lecture. (001828)

**General Education:** Laboratory (5C); Physical Science (5A)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 4 units

**Course Attributes:** Lower Division

#### CHEM 111 General Chemistry I 4 Units GE

**Prerequisite:** GE Mathematical Concepts/Quantitative Reasoning

(2) Ready; second-year high school algebra; one year high school chemistry. (One year of high school physics and one year of high school mathematics past Algebra II are recommended.)

**Typically Offered:** Fall and spring

Principles of chemistry for students in science and engineering programs. Topics include atoms, molecules and ions, reactions, stoichiometry, the periodic table, bonding, chemical energy, gases, and solution chemistry. The laboratory sequence supports the above topics including both qualitative and quantitative experiments, analysis of data, and error propagation. 3 hours laboratory, 3 hours lecture. (001816)

**General Education:** Laboratory (5C); Physical Science (5A)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 4 units

**Course Attributes:** Lower Division

#### CHEM 111X General Chemistry Fundamentals 1 Unit

**Typically Offered:** Fall and spring

Designed to give students a fundamental knowledge of chemistry to supplement prior chemistry knowledge in preparation for or in conjunction with CHEM 111. Provides students with the opportunity for additional assistance in developing chemistry knowledge and problem-solving abilities. 2 hours activity. (001830)

**Grade Basis:** Credit/No Credit

**Repeatability:** You may take this course for a maximum of 2 units

**Course Attributes:** Lower Division

#### CHEM 112 General Chemistry II 4 Units

**Prerequisite:** CHEM 111 with a grade of C- or higher.

**Typically Offered:** Fall and spring

A continuation of CHEM 111. Topics include kinetics, equilibrium, acid-base chemistry, electrochemistry, chemical thermodynamics, coordination chemistry, and nuclear chemistry. The laboratory sequence supports the above topics including both qualitative and quantitative experiments, analysis of data, and error propagation. 3 hours laboratory, 3 hours lecture. (001817)

**Grade Basis:** Graded

**Repeatability:** You may take this course for a maximum of 4 units

**Course Attributes:** Lower Division

#### CHEM 189 Internship in Chemistry 1-3 Units

**Typically Offered:** Fall and spring

9 hours supervision. (001844)

**Grade Basis:** Credit/No Credit

**Repeatability:** You may take this course for a maximum of 15 units

**Course Attributes:** Lower Division

#### CHEM 198 Special Topics 1-3 Units

**Prerequisite:** Department permission.

**Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours lecture. (001846)

**Grade Basis:** Graded

**Repeatability:** You may take this course more than once

**Course Attributes:** Lower Division

<p><b>CHEM 270 Organic Chemistry I</b> <b>4 Units</b>  <b>Prerequisite:</b> CHEM 112.  <b>Typically Offered:</b> Fall and spring  A study of the fundamental principles of organic chemistry: the chemistry of carbon compounds. Lecture topics include structure, bonding, nomenclature, physical properties of organic compounds, stereochemistry, basic spectroscopy, and basic chemical reactions and their mechanisms. Laboratory topics include the discussion and application of organic laboratory techniques, reactions, and an introduction to organic synthesis. 3 hours laboratory, 3 hours lecture. (001840)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 4 units  <b>Course Attributes:</b> Lower Division</p>	<p><b>CHEM 361 Inorganic Chemistry</b> <b>3 Units</b>  <b>Prerequisite:</b> CHEM 112; MATH 220; PHYS 202A and PHYS 202B or PHYS 204A, PHYS 204B, and PHYS 204C.  <b>Typically Offered:</b> Spring only  Emphasis on description and theory of inorganic substances: atomic structure; ionic and covalent bonding; acid-base concepts of inorganic substances; structure, bonding, thermodynamics, and reaction mechanisms of transition metal complexes; organometallic chemistry and catalysis; and bioinorganic chemistry. 3 hours lecture. (001887)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>
<p><b>CHEM 320 Quantitative Analysis</b> <b>4 Units</b>  <b>Prerequisite:</b> CHEM 112 with a grade of C- or higher.  <b>Typically Offered:</b> Fall and spring  Precision and accuracy in measurements, interpretation of data by statistical analysis, and development of good quantitative techniques. Analysis by gravimetry, titrimetry, potentiometry, chromatography, and spectrometry. 2 hours discussion, 6 hours laboratory. (001847)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 4 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>CHEM 370 Organic Chemistry II</b> <b>3 Units</b>  <b>Prerequisite:</b> CHEM 270 with a grade of C- or higher.  <b>Typically Offered:</b> Fall and spring  A continuation of CHEM 270. Topics include properties and reactions of ethers, conjugated systems, aromatic compounds, aldehydes and ketones, amines, carboxylic acids and derivatives, and biologically relevant molecules. 3 hours lecture. (001852)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>
<p><b>CHEM 331 Physical Chemistry I</b> <b>3 Units</b>  <b>Prerequisite:</b> CHEM 370M, MATH 220; PHYS 202B or PHYS 204C.  <b>Typically Offered:</b> Fall only  Overview of fundamental principles of time-independent quantum mechanics and spectroscopy, statistical thermodynamics, and chemical kinetics. 3 hours discussion. (001882)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>CHEM 370L Organic Chemistry Laboratory</b> <b>1 Unit</b>  <b>Prerequisite:</b> CHEM 370 (may be taken concurrently).  <b>Typically Offered:</b> Fall and spring  Laboratory continuation of CHEM 270. Laboratory experiments in organic chemistry focused on topics discussed in CHEM 370. Not applicable towards a degree in chemistry or biochemistry. 3 hours laboratory. (001856)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 1 unit  <b>Course Attributes:</b> Upper Division</p>
<p><b>CHEM 332 Physical Chemistry II</b> <b>3 Units</b>  <b>Prerequisite:</b> CHEM 331 with a grade C- or higher.  <b>Typically Offered:</b> Spring only  In-depth exploration of quantum mechanics and spectroscopy, classical thermodynamics, and chemical and phase equilibria. 3 hours discussion. (001883)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>CHEM 370M Organic Chemistry Laboratory</b> <b>2 Units</b>  <b>Prerequisite:</b> CHEM 370 (may be taken concurrently).  <b>Typically Offered:</b> Fall and spring  An in-depth laboratory experience in organic chemistry for chemistry and biochemistry majors. Students are introduced to and become competent in modern laboratory techniques, including handling air-sensitive reagents and column chromatography. Students also get hands-on experience with advanced instrumentation. Completes the two-semester organic lab sequence for chemistry majors. 6 hours laboratory. (001853)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 2 units  <b>Course Attributes:</b> Upper Division</p>
<p><b>CHEM 350 Introductory Biochemistry</b> <b>3 Units</b>  <b>Prerequisite:</b> CHEM 108 or CHEM 270.  <b>Typically Offered:</b> Fall and spring  A survey of biochemistry, principally for nutrition and exercise physiology majors. 3 hours lecture. (001849)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 3 units  <b>Course Attributes:</b> Upper Division</p>	<p><b>CHEM 381 Integrated Chemistry Laboratory I</b> <b>2 Units</b>  <b>Prerequisite:</b> CHEM 331 (may be taken concurrently), CHEM 370M.  <b>Typically Offered:</b> Fall and spring  Integrated application of concepts and techniques in analytical, inorganic, and physical chemistry with supervised studies in individual literature searches, including the use of Chemical Abstracts, Patent Indexes, and other reference compilations. 6 hours laboratory. (001885)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 2 units  <b>Course Attributes:</b> Upper Division</p>
<p><b>CHEM 350L Introductory Biochemistry Laboratory</b> <b>1 Unit</b>  <b>Prerequisite:</b> CHEM 350 (may be taken concurrently).  <b>Typically Offered:</b> Fall and spring  Fundamental laboratory studies and examination of the major classes of biological compounds. Principally for agriculture, child development, and nursing students. Normally not open to chemistry or biological sciences majors. 3 hours laboratory. (001850)  <b>Grade Basis:</b> Graded  <b>Repeatability:</b> You may take this course for a maximum of 1 unit  <b>Course Attributes:</b> Upper Division</p>	

<b>CHEM 382 Integrated Chemistry Laboratory II</b> <b>2 Units</b> <b>Prerequisite:</b> CHEM 331, CHEM 361, CHEM 381. <b>Typically Offered:</b> Fall only A continuation of CHEM 381. 6 hours laboratory. (001886) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 2 units <b>Course Attributes:</b> Upper Division	<b>CHEM 451 Biochemistry I</b> <b>3 Units</b> <b>Prerequisite:</b> CHEM 370 with a grade of C- or higher. <b>Typically Offered:</b> Fall and spring A general study of the chemistry of biomolecules. Conformation and function of enzymes and other proteins; metabolism, energy generation, and storage; brief discussion of important physiological processes. 3 hours lecture. (001900) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 3 units <b>Course Attributes:</b> Upper Division
<b>CHEM 389 Internship in Chemistry</b> <b>1-3 Units</b> <b>Typically Offered:</b> Fall and spring 9 hours supervision. (001865) <b>Grade Basis:</b> Credit/No Credit <b>Repeatability:</b> You may take this course for a maximum of 15 units <b>Course Attributes:</b> Upper Division	<b>CHEM 452 Biochemistry II</b> <b>3 Units</b> <b>Prerequisite:</b> CHEM 451. <b>Typically Offered:</b> Spring only Advanced topics in biochemistry. Biosynthesis of lipids, steroids, amino acids, and nucleotides. Comprehensive study of the chemical role of DNA and RNA in replication, transcription, protein synthesis, and viral activity. 3 hours discussion. (001901) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 3 units <b>Course Attributes:</b> Upper Division
<b>CHEM 398 Special Topics</b> <b>1-3 Units</b> <b>Typically Offered:</b> Fall and spring This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 0 hours lecture. (001872) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course more than once <b>Course Attributes:</b> Upper Division	<b>CHEM 453L Biochemistry Laboratory</b> <b>1 Unit</b> <b>Prerequisite:</b> CHEM 451 (may be taken concurrently). Recommended: CHEM 370L or CHEM 370M. <b>Typically Offered:</b> Fall and spring Separation, identification, and/or analysis of biological materials by modern procedures, such as spectrophotometry, chromatography (gas, TLC, column, ion exchange), electrophoresis, enzymology, fluorimetry, and high-speed centrifugation. Fulfills laboratory requirement for certain biological science majors. Does not fulfill requirement for biochemistry major. 3 hours laboratory. (021067) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 1 unit <b>Course Attributes:</b> Upper Division
<b>CHEM 399 Special Problems</b> <b>1-3 Units</b> <b>Prerequisite:</b> CHEM 112, faculty permission. <b>Typically Offered:</b> Fall and spring This course is an independent study of special problems and is offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 9 hours supervision. (001873) <b>Grade Basis:</b> Credit/No Credit <b>Repeatability:</b> You may take this course for a maximum of 6 units <b>Course Attributes:</b> Upper Division	<b>CHEM 453MW Biochemistry Laboratory (W)</b> <b>3 Units W</b> <b>Prerequisite:</b> CHEM 370M. <b>Corequisites:</b> CHEM 451. <b>Typically Offered:</b> Fall and spring Separation, identification, and/or analysis of biological materials by modern procedures, such as spectrophotometry, chromatography (gas, TLC, column, ion exchange), electrophoresis, enzymology, fluorimetry, and high-speed centrifugation. This course fulfills laboratory requirements for biochemistry majors. 1 hour discussion, 6 hours laboratory. (021068) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 3 units <b>Course Attributes:</b> Upper Division; Writing Course
<b>CHEM 401W Communicating Chemistry (W)</b> <b>3 Units W, GW</b> <b>Prerequisite:</b> GE English Composition (1A), CHEM 320, CHEM 370; either CHEM 331, CHEM 361, or CHEM 451. <b>Typically Offered:</b> Fall only This course helps students improve their skills in written communication and oral communication of chemical and biochemical information. The course centers on one particular topic within chemistry and biochemistry (chosen by the instructor) and students are asked to prepare short papers, long papers, and oral presentations focused on that topic. 2 hours activity, 2 hours discussion. (021609) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 3 units <b>Course Attributes:</b> Upper Division; Writing Course; Graduation Writing Assessment Requirement Course	<b>CHEM 477 Seminar in Organic Spectroscopy</b> <b>1 Unit</b> <b>Prerequisite:</b> Concurrent enrollment in or prior completion of CHEM 370. <b>Typically Offered:</b> Fall and spring A course whose objectives is to help students become experts at the structural determination of organic compounds using modern spectroscopic methods, including IR, UV-Vis, mass spectra, and 1D and 2D NMR techniques. 1 hour seminar. (001905) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 1 unit <b>Course Attributes:</b> Upper Division
<b>CHEM 420 Instrumental Analysis</b> <b>3 Units</b> <b>Prerequisite:</b> CHEM 332. <b>Typically Offered:</b> Fall only Theory and procedures used in separations and instrumental analysis. Emphasis on rational design of instrumental conditions based on experiment goals. Topics include atomic and molecular spectroscopies, separation methods, and electroanalytical chemistry. 3 hours discussion. (001892) <b>Grade Basis:</b> Graded <b>Repeatability:</b> You may take this course for a maximum of 3 units <b>Course Attributes:</b> Upper Division	



**CHEM 483W Integrated Chemistry Laboratory III (W) 2 Units W****Prerequisite:** CHEM 381, CHEM 382, CHEM 420.**Typically Offered:** Spring only

A continuation of CHEM 382, with a specific emphasis on independent experimental design and use of instruments. Students design, carry out, and orally present their findings for 2-3 major projects. 6 hours laboratory. (001889)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 2 units**Course Attributes:** Upper Division; Writing Course**CHEM 489 Internship in Chemistry 1-3 Units****Typically Offered:** Fall and spring

9 hours supervision. (001923)

**Grade Basis:** Credit/No Credit**Repeatability:** You may take this course for a maximum of 15 units**Course Attributes:** Upper Division**CHEM 490 Research in Chemistry 1-2 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

This course is an independent study offered for 1-2 units doing original laboratory or library investigation under individual faculty supervision. You must register directly with a supervising faculty member. 6 hours supervision. (001875)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 8 units**Course Attributes:** Upper Division**CHEM 491 Research Project 3 Units****Prerequisite:** Open by invitation to chemistry majors with a GPA of 3.0 or higher; faculty permission.**Typically Offered:** Fall and spring

A research project within chemistry or an interdisciplinary project which involves chemistry. Students will be involved with design, library, laboratory, and data analysis aspects of a research problem. 9 hours supervision. (001921)

**Grade Basis:** Graded**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**CHEM 498 Special Topics 1-3 Units****Prerequisite:** Department permission.**Typically Offered:** Fall and spring

This course is for special topics offered for 1.0-3.0 units. Typically the topic is offered on a one-time-only basis and may vary from term to term and be different for different sections. See the Class Schedule for the specific topic being offered. 3 hours lecture. (001925)

**Grade Basis:** Graded**Repeatability:** You may take this course more than once**Course Attributes:** Upper Division**CHEM 499 Special Problems 1-3 Units****Prerequisite:** Faculty permission.**Typically Offered:** Fall and spring

This course is an independent study of special problems offered for 1.0-3.0 units. You must register directly with a supervising faculty member. 3 hours supervision. (001926)

**Grade Basis:** Credit/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division**CHEM 499HW Honors Research Project (W) 3 Units W, GW****Prerequisite:** GE English Composition (1A), senior standing, faculty permission.**Typically Offered:** Fall and spring

Open by invitation to chemistry or biochemistry majors who have a GPA of 3.5 or higher. Not open to students who have credit for CHEM 491. This is an "Honors in the Major" course. 9 hours supervision. (001927)

**Grade Basis:** ABC/No Credit**Repeatability:** You may take this course for a maximum of 6 units**Course Attributes:** Upper Division; Writing Course; Graduation Writing Assessment Requirement Course

## Chemistry and Biochemistry Department

### The Faculty

**Tiffani N Anderson** 2006

Lecturer

Master of Science Purdue Univ Main Campus

**Carolynn C Arpin** 2014

Associate Professor

Doctor of Philosophy Univ Of Colorado At Boulder

**Robabeh Bashiri** 2024

Lecturer

Doctor of Philosophy University Teknologi Petrona

**David J Birchette** 2020

Lecturer

Bachelor of Science CSU-Chico

**Daniel D Clark** 2005

Professor

Doctor of Philosophy Utah St Univ

**Daniel J Edwards** 2005

Professor

Doctor of Philosophy Univ Of Cal-Davis

**Emmanuel Gallegos Martinez** 2023

Lecturer

**Stephen L Hillyard** 2014

Lecturer

Doctor of Philosophy Univ Of Cal-Davis

**Ryan M Jones** 2014

Lecturer

Master of Science Univ Of Cal-Santa Barbara

**Lisa K Kendhammer** 2016

Associate Professor

Doctor of Philosophy Univ Of Wisconsin-Milwaukee

**Preston Lawson** 2021

Lecturer

Bachelor of Science CSU-Chico

**Tina R Lewis** 2015

Lecturer

Master of Science CSU-Chico

**Christopher J Nichols** 1999

Chair

Doctor of Philosophy Univ Of Cal-Los Angeles

**Lisa S Ott** 2008

Professor

Doctor of Philosophy Colorado St Univ

**John R Peterson** 2024

Lecturer

Doctor of Philosophy Univ Of Minnesota Twin Cities

**Sisarie Sherry** 2016

Lecturer

Bachelor of Science CSU-Chico

**Monica C So** 2015

Associate Professor

Doctor of Philosophy Northwestern Univ

**Erik C Wasinger** 2007

Professor

Doctor of Philosophy Stanford Univ

**Jinsong Zhang** 2006

Professor

Doctor of Philosophy Univ Of Montana

## **Emeritus Faculty**

**Donald B Alger**

Emeritus

Doctor of Philosophy Washington St Univ

**David B Ball**

Emeritus

Doctor of Philosophy Univ Of Cal-Santa Barbara

**Ron C Cooke**

Emeritus

Master of Science Univ Of The Pacific

**Marvin Gold**

Emeritus

**Larry L Kirk**

Emeritus

Doctor of Philosophy Univ Of Cal-Santa Barbara

**William D Korte** 1966

Emeritus

**Barbara O Mejia**

Emeritus

Doctor of Philosophy Univ Of Cal-Davis

**Randy M Miller** 1988

Professor

Doctor of Philosophy Univ Of Cal-Davis

**James M Postma**

Emeritus

Doctor of Philosophy Univ Of Cal-Davis

**Rodney H Quacchia**

Emeritus