

as a source of new ligands for transition metal chemistry and applications in catalysis and material science. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. **Mathey**

CHEM 282. Elementary Processes in Atmospheric Chemistry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. Applies state-of-the-art laser techniques to investigate elementary processes in atmospheric chemistry. Emphasis is quantitative understandings of atmospheric free-radical intermediates, their photochemistry, and their reaction mechanisms. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. **Zhang**

CHEM 283. Development of Inorganic Solid State Materials (2) Seminar, 2 hours. Prerequisite(s): graduate standing; consent of instructor. Focuses on the development of advanced materials such as optical, electronic, and porous materials. Topics include synthetic methods, characterization techniques, property measurements, and device applications. Special emphasis is placed on the design of synthetic strategies for the discovery of new functional materials with novel properties. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade based on seminar participation. Course is repeatable. **Feng**

CHEM 284. Biological Mass Spectrometry (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. A study of the synthesis, purification, and mass spectrometric characterization of biomolecules, nucleic acids in particular. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. **Wang**

CHEM 285. Bio-inspired Materials and Chemical Sensors (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. A study of biomaterials and their application in analytical chemistry. Focus is on the design and synthesis of new materials, electrochemical detection, and the Surface Plasmon Resonance (SPR) technique. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. **Cheng**

CHEM 286. Time-Resolved Spectroscopy and Microscopy and Dynamics in Complex Systems (2) F, W, S Seminar, 2 hours. Prerequisite(s): senior or graduate standing in Chemistry or consent of instructor. A comprehensive survey of modern time-resolved spectroscopy and microscopy techniques. Emphasizes applications to outstanding problems in materials science and biology. Specific problems include the measurement of energy transport in organic semiconductors and DNA dynamics in biological media. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. **Bardeen**

CHEM 287. Modeling Molecular Recognition (2) Seminar, 2 hours. Prerequisite(s): graduate standing in Chemistry or consent of instructor. Focuses on molecular recognition and systems-level simulations, addressing theory and applications. Includes statistical mechanics (as applied to the prediction of equilibrium and nonequilibrium properties of chemical and biological systems), drug design and discovery, and cheminformatics. Utilizes numerical analysis, molecu-

lar dynamics and Brownian dynamics simulations, docking and scoring programs, and chemical database tools. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. **Chang**

CHEM 288. Bioanalytical Applications of Nuclear Magnetic Resonance (NMR) and Mass Spectrometry (MS) (2) Seminar, 2 hours. Prerequisite(s): consent of instructor. Focuses on the study of ligand-protein interactions, metabonomics, with special emphasis on the application of hyphenated NMR and MS experiments. Also discusses new NMR pulse sequences and microcoil probes. Students who present a seminar or submit a term paper receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. **Larive**

CHEM 289. Special Topics in Neuroscience (2) Seminar, 2 hours. Prerequisite(s): graduate standing or consent of instructor. An interdisciplinary seminar consisting of student presentations and discussion of selected topics in neuroscience. Content and instructor(s) vary each time course is offered. Students who present a seminar receive a letter grade; other students receive a Satisfactory (S) or No Credit (NC) grade. Course is repeatable. Cross-listed with BCH 289, BIOL 289, ENTM 289, NRSC 289, and PSYC 289. **Hatton in charge**

CHEM 297. Directed Research (1-6) Prerequisite(s): consent of a staff member. Research in analytical, inorganic, organic, or physical chemistry under the direction of a member of the staff. A written report is required of the research study. Graded Satisfactory (S) or No Credit (NC).

CHEM 299. Research for Thesis or Dissertation (1-12) Prerequisite(s): consent of a staff member. Research in analytical, inorganic, organic, or physical chemistry under the direction of a member of the staff. This research is to be included as part of the dissertation. Graded Satisfactory (S) or No Credit (NC). Course is repeatable.

Professional Courses

CHEM 301. Oral Presentations in Chemistry (1)

Lecture, 1 hour. The technique of oral presentation, emphasizing the problems that arise in chemistry laboratory and classroom situations. Designed primarily for new graduate students in the Chemistry Department. Graded Satisfactory (S) or No Credit (NC).

CHEM 302. Teaching Practicum (1-2) lecture/laboratory, 4-8 hours. Prerequisite(s): Limited to Chemistry Department teaching assistants and Associates-In Chemistry. Supervised teaching in undergraduate courses in Chemistry. Graded Satisfactory (S) or No Credit (NC). May be repeated for credit. Units are not applicable to degree unit requirements.

The Chicano Bilingual-Bicultural Studies Minor

College of Humanities, Arts, and Social Sciences

Adalberto Aguirre, Jr., Ph.D., Chair
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(951) 827-5507; chicanobbbstudies.ucr.edu

Committee in Charge

Philip Gericke, Ph.D. (Spanish and Portuguese)
Alfredo M. Mirandé, Ph.D. (Ethnic Studies)
Yolanda Venegas, Ed.D.
Stephen E. Cullenberg, Ph.D.
Dean, College of Humanities, Arts, and Social Sciences, ex officio

The Chicano Bilingual-Bicultural Studies minor provides the student with a basic understanding of the Spanish language and of the Mexican American bicultural contacts in which that language is used in the southwestern United States.

- Lower-division requirements (8 units)
 - Four (4) units from ETST 002, ETST 004/HIST 004
 - Four (4) units from one of the following:
 - SPN 006
 - Any upper-division course taught in Spanish language
- Upper-division requirements (16 units)
 - One course in the general area of Education and Bilingualism from ETST 146/EDUC 146, ETST 163/SOC 163, ETST 165/SOC 165, ETST 166
 - One course from the general area of Societal Perspectives on the Chicano Experience ETST 142
 - One course from ETST 123, ETST 124, ETST 126, ETST 128/SOC 128
 - One course in Chicano Art or Literature from ETST 108P, ETST 114, ETST 153/LNST 153, ETST 191N

See Minors under the College of Humanities, Arts, and Social Sciences in the Colleges and Programs section of this catalog for additional information on minors.