# COLLECTION DEVELOPMENT STATEMENT

# CHEMISTRY & BIOCHEMISTRY (FUND 34255)

Greg Nelson

The library seeks to support teaching and research in Chemistry and Biochemistry at the Research level.

## About the Department

The Department of Chemistry and Biochemistry is functionally divided into five research areas: Analytical Chemistry, Inorganic Chemistry, Organic Chemistry, Physical Chemistry and Biochemistry.

The undergraduate program has degrees in Biochemistry (BS), Chemistry (BA), Chemistry (BS), Chemistry Education (BS), with minors in Chemistry and Chemistry Education. The Chemistry Bachelor of Science degree is the preferred degree designed for students considering an advanced degree (MS or PhD) or for those in preprofessional programs, such as medicine or dentistry. The Biochemistry Bachelor of Science degree is designed for students with an interest in an advanced degree in biochemistry or who may be interested in health-related fields, such as medicine or veterinary medicine. Chemistry Education Bachelor of Science degree provides the preparation necessary for high school teaching. Each major fulfills the Advanced Writing component through the Chemistry 391 course, which has 3-4 class periods for library instruction.

The Master’s degree in Chemistry (Analytical, Inorganic, Organic, Physical) or Biochemistry is primarily research-based, though there is required coursework. The programs are meant to prepare students to conduct high quality research in government, industry and educational institutions. A minimum of 30 semester hours are required, which include coursework, seminars, research and thesis. A written thesis with an oral presentation and defense is required. There are no library associated courses or classes required for Masters students.

The Doctoral degree in Chemistry (Analytical, Inorganic, Organic, Physical) or Biochemistry is primarily research-based, though there is required coursework. The programs prepare students to conduct high quality research in government, industry and educational institutions. A minimum of 54 semester hours are required, which include coursework, seminars, research and thesis. A written dissertation with an oral presentation and defense is required. Most doctoral students do not have a library component except those in Organic Chemistry. The library teaches a workshop for these doctoral students so that they can pass an electronic information retrieval exam.

## Formats

Chemistry and Biochemistry faculty and students predominantly use online databases and journal articles. Online journal article access is available through publisher packages, database subscriptions, and individual title management. Books are purchased mainly via the YBP approval plan. Three to four times a year faculty are provided with a list of new books from selected YBP slips and queried for firm order requests; very few firm order purchases are made without faculty request. Circulation rates are quite low for monographs. E-books are purchased where possible, to increase accessibility and use.

## Degree Programs and Collecting Levels

Bachelor of Science, Biochemistry: Teaching Level

Bachelor of Science, Chemistry: Teaching Level

Bachelor of Arts, Chemistry: Teaching Level

Bachelor of Science, Chemistry Education: Teaching Level

Master of Science, Biochemistry: Research Level

Master of Science, Chemistry: Research Level

Doctor of Philosophy, Biochemistry: Research Level

Doctor of Philosophy, Chemistry: Research Level

## Research Interests

* Chemoresistance in cancer
* Pathogenesis of familial Amyotrophic Lateral Sclerosis
* Organic synthesis of natural products and peptides
* Organometallic Catalysis
* Mass Spectroscopy
* Nuclear Magnetic Resonance
* HIV pathogenesis
* Chemotherapeutics
* Glucose metabolism in eukaryotic parasites
* Angiogenesis
* Fourier transform mass spectrometer
* Transition-metal catalysis modeling
* Modeling of organic reactions and catalysis
* Analytical spectroscopy
* Lasers and optics
* Preeclampsia
* Clinical chemistry
* Biofuel/Alternative Energy
* Atmospheric and Environmental Chemistry
* Molecular recognition
* Ion chromatography
* Nanomaterials
* Material surface modification
* Vibrationally resonant sum-frequency generation
* High performance liquid chromatography
* Antitumor and antiviral synthesis
* Stable isotope labeling of living cells
* Protein folding
* Bioorganic chemistry
* Protein glycosylation
* Protein synthesis using unnatural amino acids
* Membrane active antibiotics
* Glycolipid immunology
* Chemical reaction dynamics
* Signal transduction
* X-ray Diffraction
* Carbon dioxide catalysis
* Bioinorganic chemistry
* Molecular signaling complexes
* Chemical Thermodynamics
* Synthesis of Nanoparticles
* Fisher-Tropsch Catalysis
* Micro-and Nanometer-Scale Chemical Manipulation and Analysis

## Subject Librarian Annual Collection Reports

2015

* **Infotherm database.** Secured funding for the license of this database of thermodynamic data.
* **JoVE evaluation**. Evaluated the use of the Journal of Visualized Experiments (JoVE) and potential need for acquiring or cancelling sections.