

**Summarized Assessment Report 2007**  
**Department of Chemistry**  
**(B.S., M.S., Ph.D., CIP 40.0501)**

**1. Mission, Centrality and Uniqueness**

The mission of the Department of Chemistry is to create, accumulate and disseminate knowledge of use and benefit to the citizens of the State of Kansas, our country and the world. It does so through creative research activity, through quality instruction in classroom and laboratory courses, through training of undergraduate, graduate and postdoctoral scientists and educators, and through service to the profession, the University and the community. Chemistry is known as the "Central Science" by virtue of its intersections with Mathematics and Physics at its theoretical boundaries, and by its overlaps with Biology, Biochemistry, Engineering, Medicine and Environmental and Agricultural Science at its practical and applied boundaries. Chemistry is crucial to many areas identified as State and National priorities, including Energy Conversion, BioScience, Homeland Security, Materials, Disease Prevention and Treatment, and Environmental Protection.

**2. Degree Program and Quality of Faculty**

The department offers the B.S., M.S. and Ph.D. degrees in Chemistry. At the undergraduate level, a sub-curriculum - Chemical Science - is offered for students seeking a strong concentration in chemistry, often as a foundation for professional school. The B.S. program is accredited by the American Chemical Society. As of Fall 2007, the Chemistry Department faculty consists of 17 Graduate Faculty members, 4 non-graduate instructional faculty members, and several scientific specialists. The faculty have received numerous recognitions of their excellence in research, teaching and service. Our current Graduate Faculty members have received three National Science Foundation CAREER Awards, an Alfred P. Sloan Fellowship, a Research Corporation Opportunity Award, the American Chemical Society's Midwest Award, a Masao Horiba Award, the Sigma Xi Outstanding Senior Scientist Award, three Distinguished Graduate Faculty Member Awards, and the American Chemical Society's Young Investigator in Separation Science Award. Our faculty members have held numerous invited professorships at universities throughout Europe and Asia. Over the four year period FY 03 - FY 06, total extramural grant support averaged \$2.377 M annually (\$158,400 per graduate faculty member per year), and the graduate faculty published a total of 271 manuscripts in refereed journals. Our faculty members have also distinguished themselves in the classroom: two of our members have received the University's highest teaching honor - the Presidential Award for Excellence in Undergraduate Teaching. Our faculty also includes multiple recipients of both the Conoco Outstanding Undergraduate Teaching Award and the William Stamey Teaching Award, and a recipient of the Stamey Undergraduate Advising Award.

**3. Quality of Students**

As measured by success in finding employment, or by being admitted to prestigious graduate programs or postdoctoral research positions, our students at all levels demonstrate very high quality. Their quality can also be seen by the prestigious accolades awarded them: since 2000, KSU Chemistry graduates have received 6 Goldwater Scholarships, a Rhodes Scholarship, a Udall Scholarship, 2 National Science Foundation Graduate Fellowships and a Fulbright Fellowship.

#### **4. Employer Demand**

The market for students holding KSU Chemistry degrees is strong. All of our B.S. graduates are required to participate in undergraduate research, and this makes our undergraduates attractive to employers and graduate/professional programs. Many of our B.S. graduates have chosen to attend graduate school, and have been admitted to top-tier programs (*e.g.*, University of Arizona, University of California-Berkeley, University of Michigan, University of Tennessee). At both the undergraduate and graduate levels, our students have found excellent industrial positions in Kansas (*e.g.*, Hospira and NanoScale) and outside the State (*e.g.*, Halliburton Energy Services). Others among our Ph.D. graduates have chosen to pursue postdoctoral studies at prestigious institutions (*e.g.*, University of North Carolina, University of Strasbourg, University of Michigan, Argonne National Laboratory).

#### **5. Service Provided to the Discipline, the University and Beyond**

The KSU Chemistry Department provides foundational courses serving thousands of students in a variety of curricula each year. Solely at the freshman level, each year Chemistry instructs *ca.* 3,000 students in lectures and *ca.* 2400 students in laboratories. Seven chemistry courses are accepted for General Education credit. The department staffs a walk-in Help Room, where students in any chemistry course can come for out-of-class assistance. Our faculty members serve on the Editorial and Editorial Advisory Boards of many scientific journals, and are routinely asked to serve on panels of the National Science Foundation, the Department of Energy, the National Institutes of Health, and the National Academy of Sciences. Each year, Chemistry faculty review hundreds of manuscripts for journals and proposals for granting agencies. Chemistry faculty participate extensively in departmental and University service, and are active in professional societies. We conduct and support several outreach events every year for the community and for students in elementary, middle and secondary schools.

#### **6. Cost Effectiveness**

Maintaining nationally-recognized teaching and research programs in Chemistry at the undergraduate and graduate levels is expensive, yet unlike all of our peers in the Mid-American State University Association (MASUA) group, KSU does so without the imposition of a dedicated laboratory fee. The department generates *ca.* 15,000 student credit hours each academic year. Our faculty are very successful in obtaining extramural funding to support their research, generating *ca.* \$2.4 M annually over the report period (averaging *ca.* \$160,000 per year per graduate faculty member).