1

# FY2006 DEPARTMENTAL ANNUAL REPORT OF CONTINUOUS IMPROVEMENT

# **Department of Chemistry Fort Hays State University**

# I. Departmental Overview

The Department of Chemistry exists to provide education in all the major branches of chemistry, and to carry out limited research and service activities related to the chemical sciences, for the benefit of the people of Kansas. As one of the liberal arts, chemistry is an important part of the educational mission of Fort Hays State University. In addition, chemistry is an essential part of the education of those pursuing careers in medicine, pharmacy, dentistry, optometry, nursing, and other health professions, as well as careers in chemistry and related sciences. As a "central science", chemistry is a useful field of study for students in a wide variety of other fields as well, such as education, art, business, agriculture, and many others.

The Department offers both B.A. and B.S. degree programs, as well as degree emphases in the areas of Biological Chemistry, Environmental Science, Forensic Science, and Teacher Education. The Department also participates in the Master of Liberal Studies graduate program. Aside from advising Chemistry majors, Chemistry faculty advise for a large number of Pre-Professional programs – including Pre-Medicine, Pre-Pharmacy, Pre-Dentistry, and Pre-Optometry – even when those students do not complete a degree in Chemistry. Departmental members act as resource persons for individuals and organizations seeking advice in matters related to chemistry, such as faculty members at community colleges, small companies throughout western Kansas, and private individuals with questions about the use or handling of chemical products.

Within the University, the Department of Chemistry offers advice and assistance in chemical matters, and participates in activities involving other science departments. Among these are Science Day, the Science Olympiad, and activities sponsored by Sigma Xi, the science research honorary society. The Department strongly supports efforts to improve science education throughout Kansas, sponsoring its own Speakers Bureau and regularly acting as host for the annual Kansas College Chemistry Teachers Conference. Chemistry faculty members support research in chemistry by, among other things, annually presenting seminars based on recent results from the chemical literature.

#### A. Departmental Mission and Vision Statements

The Chemistry Department provides undergraduate education in chemistry for chemistry majors; for other science majors including the biological sciences, geology, and physics; and for other majors with a chemistry requirement such as agriculture and nursing. The department also provides chemistry courses that satisfy General Education requirements of the University. Research activities of the department emphasize teaching upper-division undergraduate majors how to conduct research by providing the opportunity for them to work with a faculty member on a research project. The department serves as a regional resource on chemical matters through consultation and, if needed, laboratory analysis. The Chemistry

Department seeks to prepare students for employment as chemists, for graduate school, for professional school, or for teaching, through a curriculum with major emphasis on laboratory instruction and computer usage in the chemical laboratory. The central focus of the department is to use the experimental nature of chemistry to help students develop their analytical and problem solving skills.

B. Departmental Goals, Objectives, and Strategic Priorities

#### DEPARTMENTAL GOALS

To work for improved scientific literacy in all Fort Hays State students.

To improve the quality of all entry-level chemistry courses including: The Chemist's View of the World, General Chemistry, and University Chemistry.

To utilize the assessment results in an ongoing review process to improve the quality of the chemistry programs.

To introduce direct data acquisition technology into the entry-level chemistry laboratories.

To obtain scientific instrumentation to replace non-functioning and/or obsolete equipment.

To obtain new scientific instrumentation representative of instruments currently used in the discipline.

To increase the sense of accomplishment students express in their evaluation of chemistry courses.

To improve the retention of qualified students as chemistry majors.

To increase the role of the Chemistry/Preprofessional Club in the activities of the department.

To expand the opportunities for students to participate in research projects.

To continue an active seminar program and to make the seminar speakers available to high school teachers through the fiber optics network.

To continue and expand the services provided to area chemistry teachers.

To encourage a regular pattern of faculty sabbatical leaves.

To bring the chemistry department into compliance with all state and federally mandated safety regulations as they evolve.

To aid the economic development of Western Kansas by providing expertise on chemical matters.

3

# **II. Departmental Highlights**

#### A. Departmental Productivity and Other Distinctive Departmental Accomplishments

The Department of Chemistry views its duties of teaching, scholarly research, and service to be inter-related and inseparable. As a consequence, no single measure of departmental productivity can adequately assess the activities of the members of the department collectively or individually. Furthermore, many activities of departments and individuals are not amenable to simple measurement or assessment, even subjectively. For example, there is no way to measure the intellectual growth and maturation of students over four years of college, or to assess the value of professional advice provided to external individuals or organizations. It should also be emphasized that the Chemistry Department provides services over and above advisement and coursework for Chemistry majors. Pre-Pharmacy students, who normally do not complete any undergraduate degree, and Pre-Medical students, who often major in fields other than Chemistry, are all advised and instructed by Chemistry faculty members. At the same time, certain comments about efforts and outcomes of the Chemistry Department or its members have a place here, and can act as sign posts to mark out some of the accomplishments of the past year, accomplishments that do not fit well within the categories below.

During FY 2006 Chemistry faculty members and students had several noteworthy accomplishments in the category of research and scholarly activity to their credit. Dr. Tom Wiese was successful in his application for a Research Sites for Educators in Chemistry (RSEC) grant, for a total of \$43,000, to be utilized during his sabbatical at Wichita State University for the spring and summer of 2006. Dr. Wiese's research greatly benefits our undergraduate students because of its multi-disciplinary nature and leading-edge relevance. Aside from the research presentations reported below, the work initiated by Dr. Eddie Olmstead and students working under his direction notably raised the visibility of scientific research at FHSU in the eyes of the general public during FY 2006. Their award-winning presentation at the Sigma Xi Science Showcase - part of the Spring, 2006 Research and Creative Activity Week at FHSU was the major highlight, although reports about their work by the Hays Daily News and a Wichita television station should also be noted. During FY 2006, a FHSU Chemistry alumna arranged for her state agency to transfer to the FHSU Chemistry Department three researchquality analytical instruments, and she also advised and assisted Dr. Olmstead in the re-assembly and testing of one of these instruments. This very generous gift makes possible not only significantly enhanced research opportunities but also contributes to improvements being made in Junior- and Senior-level lab classes.

Instructional efforts in Chemistry benefited by other activities and initiatives during FY 2006 as well. Dr. Loretta Dorn, working with Dr. Mary Morgan of the FHSU Biology Department, developed an inter-disciplinary course on the subject of Science in New Zealand. Chemistry faculty members regularly are honored for teaching excellence, and this past academic year was no exception. A Mortar Board "Top Prof" award, and nominations for Pilot and Navigator awards, all took place this year. Another way to assess achievement in teaching is to take note of the feedback we receive from alumni. As noted in our Affinity Diagram (page 11), 100% of the alumni who responded to a recent survey would recommend the FHSU Chemistry Department to a son or daughter interested in pursuing one of our programs. Virtually all students completing programs administered by the Chemistry Department move on to graduate or professional school, or find employment, in fields directly related to the field of chemistry laboratory classes. Because of the importance of experimentation in the sciences, one factor in assessing the value of an education in chemistry must be the number of hours students spend getting hands-on experience in the laboratory. As noted in Appendix 4, among

the three regional universities in the Kansas Regents System (Emporia State University, Pittsburg State University, and Fort Hays State University) the B.S. degree program in Chemistry at FHSU requires more lab hours than either of the other schools' B.S. programs. While more time in the laboratory cannot be simply equated with more learning, it is certainly the case that hands-on experiences under genuine laboratory conditions are highly esteemed as part of an education in chemistry. It should also be noted that the other regional universities' Chemistry Departments have graduate teaching assistants to take on much of the burden of teaching lab classes.

Achievements in service by members of the Chemistry Department are similarly noteworthy. Several Chemistry faculty members (Drs. Stephen Donnelly, Loretta Dorn, Max Rumpel, and Tom Wiese) had or accepted leadership roles in professional organizations (Sigma Xi, and the Wichita section of the American Chemical Society) during FY 2006. Dr. Eddie Olmstead regularly supervises the Boy Scout merit badge activities, and did so during this past year. Mr. Bill Scott, though a part-time faculty member in Chemistry, took responsibility for National Mole Day activities in Fall, 2005, aided by other Chemistry faculty members. Faculty members often act as judges for nearby Science Fairs. The value of these contributions in teaching, research, and service cannot be simply assessed by numbers, but in the eyes of the members of the Chemistry Department their importance is unquestionable.

Key Performance Indicator	Baseline FY2004	Actual FY2005	Actual FY2006	Goal FY2007
Number of New Freshmen	33	34	27	32
Number of Transfer Students	8	6	7	6
Number of Majors:				
Undergraduate (first majors/second majors)	90/7	88/5	76/3	85/5
Graduate	0	0	0	0
Departmental majors	97	93	79	90
MLS students	0	0	0	1
Student Credit Hour Production				
Undergraduate	3138	2942	2645	2800
Graduate	22	2	12	15
FTE Faculty (Headcount)				
Tenured or Tenure-track Faculty (Headcount)	6	6	6	7
NonTenure-Track Faculty (Headcount)	1.25	1.25	1.25	0.5

#### **B.** Performance Indicators

Key Performance Indicator	Baseline FY2004	Actual FY2005	Actual FY2006	Goal FY2007
Other Faculty (Headcount/Sections Taught)	0	0	0	0
Degrees Awarded				
Undergraduate degrees	14	5	5	8
Graduate degrees	0	0	0	0
Departmental degrees	14	5	5	8
MLS degrees	0	0	0	0
Scholarly Activity (See Section IV for documentation requirement)				
Number of books, book chapters, and <b>refereed</b> articles published	0	5	3	4
Percent of faculty publishing <b>refereed</b> books, chapters, or articles	0	28%	28%	30%
Number of <b>non-refereed</b> articles and presentations	0	0	0	0
Percent of faculty publishing <b>non-</b> <b>refereed</b> articles or presentations	0	0	0	0
Number of scholarly performances and other creative activities	2	3	5	4
Percent of faculty in scholarly performances or other creative activities	14%	28%	28%	30%
Total number of external grant applications submitted/percent of faculty submitting	0	3/14%	1/14%	1/14%
Total number of funded external grants/percent of faculty funded	1/14%	3/14%	1/14%	1/14%

Key Performance Indicator	Baseline FY2004	Actual FY2005	Actual FY2006	Goal FY2007
Service Activity				
Percent of faculty meeting acceptable standard of service activity	100%	100%	100%	100%
Percent of faculty meeting exceptional standard of service activity	33%	50%	50%	50%
Assurance of Student Learning				
1. Score on standardized exam taken by majors at end of sophomore- level course; mean score/national mean	41.6/43.1	42.0/43.1	42.6/43.1	43.5
2. Average grade in capstone course: Seminar in Chemistry	87.6%	82.9%	80.7%	85%
Other Departmental Key Performance Indicators (up to 3 additional measures, optional)				
1. Contact hours per week/full- time faculty (excluding department chair)	17.6	14.7	16.9	15
2. Number of letters to prospective freshmen	>1000	1138	1368	1450
3. Lab contact hours per week for B.S. degree, FHSU/Regional Univ. avg.	38/27.3	38/27.3	38/27.3	35

# C. Current Quality Initiatives and Results

FV 2006 Quality Initiatives	Results
1 Increased Efficiency in CHEM 120L	Although hampered by the sabbatical
and CHEM 122L	leave of one full-time faculty member this
Our largest chemistry lab courses CHEM	initiative was largely completed with
1201 and 1221 currently suffer from	major input by Drs Stephen Donnelly and
certain inefficiencies especially in regard	Eddie Olmstead Lab report formats were
to assessment Improvements in direct	extensively revised for better organization
data acquisition (see FY 2005 Quality	and assessment and procedures for more
Initiative 1) should help to improve	efficient and rapid sorting of completed
efficiency and refinements in lab	lab reports were established Although
procedures and lab report formats are the	refinement of lab procedures is and should
next logical step in this direction. The	be an ongoing effort, the work completed
ultimate goal is to drastically reduce turn-	has already resulted in a reduction in
around time in completing lab procedures	general complaints about efficiency
and in returning graded lab reports giving	during and after labs
students more useful and timely feedback	during and arter rabs.
and increasing student satisfaction	
2 Combined Advanced Laboratory	Extensive discussions among instructors
2. Combined Advanced Laboratory Course Pronosal Development	of advanced Chemistry courses resulted in
Among the recommendations made by the	a detailed description of proposed changes
chemistry consultant brought in by the	to our B S major curriculum as well as
department three years ago (Action Plan	two proposals for the specific topics to be
E3 CHEM 01 E03) was to increase the	included in combined advanced laboratory
number of upper-division laboratory hours	coursework Dr. Eddie Olmstead who
for chemistry majors Simply adding one	carried out the bulk of this initiative is
or more advanced lab courses to the major	currently weighing the pros and cons of
requirements is not a viable option, but if	these two proposals with input from the
lab course topics currently connected with	other affected instructors. Course change
two or more advanced lecture courses	proposals will be submitted shortly and
were combined the number of hours could	further course changes and/or new course
be adjusted satisfactorily Furthermore	proposals are expected
combining of lab course topics could free	proposals are expected.
up hours that would permit majors to	
engage in research, another of the	
consultant's recommendations.	

FY 2007 Quality Initiatives	<b>Responsible Party, Resources, and Plan</b>
1. Lab Supervisor for CHEM 120L and	Dr. Jim Hohman will assign the duties of
<b>CHEM 122L</b>	lab supervisor to one of the instructors of
Last year's first Quality Initiative notably	CHEM 120L or 122L each semester, and
increased efficiency in grading and	adjust teaching loads to take these extra
returning CHEM 120L and 122L lab	duties into account. The lab supervisor
reports, but it used up much more time	will be asked to report periodically on
and effort than was anticipated. Future	progress made as the semester proceeds,
improvements in efficiency will require	and will collect feedback from instructors
coordination of the work of 3-4 instructors	and lab assistants as part of the assessment
and several lab assistants, and so will	procedures. If necessary, whole lab
necessitate the establishment of a lab	procedures may be eliminated or
supervisory position. This person will	coalesced, or wholly new procedures
plan the set-up of experiments; assign	proposed, to eliminate chronic
duties for preparation, tear-down, and	inefficiencies. Time needed for
grading; and assess lab procedures to	completion and grading of reports will be
maximize both safety and pedagogical	measured to assess this initiative.
utility.	
2. Utilization of Tablet Computers in	Dr. Jim Hohman will solicit suggestions
Chemistry Courses	for best use of the tablet computers at
A recently approved Action Plan (A2	different levels of Chemistry coursework,
CHEM 03 E06) provides five Chemistry	and will act as clearing-house for uses that
faculty members with tablet computers, in	seem particularly beneficial. Faculty
addition to one tablet computer provided	members who test specialized software
last year as part of the mobile computing	will be periodically asked to assess the
pilot project. Specialized chemistry-	value of this software in the presentation
related software will be installed on some	of specific class topics, and these
of these tablets to supplement ordinary	assessments will be made available on the
methods of presentation of course material	department's Blackboard site for easy
(e.g. DyKnow). For some courses	access by other faculty members. Faculty
molecular modeling software will need to	members will also be encouraged to
be evaluated for pedagogical value, and	present the results of the assessments in
publisher-provided software connected	chemical education seminars, or possibly
with specific textbooks will also be	publications, for use by chemistry
considered for use.	instructors elsewhere. The merits of this
	initiative will be measured by the quantity
	and quality of the assessments.

# **III.** Strategic Plan and Opportunities for Improvement for FY2007

# A. Departmental Reflection of Strengths, Weaknesses, Opportunities, and Threats

Strengths	Weaknesses/Needs
First, it must be stated that the Chemistry	One chronic concern is that of excessive
Department is what it is because of highly	teaching contact hours (see II., under
dedicated and capable faculty members.	"Other Departmental Key Performance
Each of the full-time faculty members	Indicators"). This reduces time available
possesses the terminal degree in	for service activities and for research – so
chemistry, and they represent all the major	necessary in an advancing technical field
sub-disciplines within the field. Second,	like chemistry – and it creates a number of
the department benefits from outstanding	scheduling problems. Another concern is
facilities in Tomanek Hall, and numerous	that we are the only Chemistry
pieces of state-of-the-art equipment and	Department among the 6 four-year
instrumentation. Finally, programs	institutions within the Regents system that
administered within the department – both	does not have a degree program approved
major degree programs and pre-	by the American Chemical Society
professional programs – are well	(ACS).
established and highly regarded.	
Opportunities	Threats
Opportunities One positive sign for the department is the	Threats One ominous development is the
<b>Opportunities</b> One positive sign for the department is the notable increase in visibility over the past	Threats One ominous development is the imminent retirement of two of the seven
One positive sign for the department is the notable increase in visibility over the past year of research opportunities – both	Threats One ominous development is the imminent retirement of two of the seven full-time faculty members. Since two
Opportunities One positive sign for the department is the notable increase in visibility over the past year of research opportunities – both chemical and inter-disciplinary research –	Threats One ominous development is the imminent retirement of two of the seven full-time faculty members. Since two other full-time faculty members do not
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## **B.** Opportunities for Improvement

Short Term OFI	<b>Resources Required</b>	Expected Outcome and Completion Date
[See FY 2007		
Departmental Initiatives.]		

Long Term Strategic Initiatives	<b>Resources Required</b>	Expected Outcome
1. As discussed above (under SWOT analysis), we are the only Chemistry Department among the 6 four-year institutions in the Regents system that does not have a degree program approved by the American Chemical Society (ACS). For both recruitment and assessment purposes, we seek to develop a modified version of our B.S. degree program that would meet ACS guidelines for approval.	To move towards ACS approval, several advanced courses will need to be extensively modified, and at least one wholly new course will have to be developed. Since student research hours are required for ACS approval, a budget for research equipment and supplies may have to be established. Finally, to reduce teaching contact hours so that they meet ACS guidelines an increase in FTE may be needed.	In FY 2006 we outlined several course changes that will be necessary, and examined the details of two possible approaches to coalescing topics in advanced chemistry lab courses. In FY 2007 we plan to submit the first of the course change approval forms and possibly a new course proposal, and we'll establish a timeline for seeking ACS approval. These changes will be used in assessment of our program, recruitment of new students and
2. The B.A. Teacher Education program in Chemistry is very small at a time when chemistry teachers, like other science teachers, are badly needed throughout Kansas. Several inter-related proposals to increase the popularity and effectiveness of our program to prepare science teachers are being considered.	Among the proposals being discussed is a plan to consolidate two or more of the teaching methods classes in the science fields, which would necessitate course change approvals. Another plan is to create opportunities for workshops to assist current and prospective teachers in the teaching of science topics, and funding for these workshops and supplies would be sought. More extensive changes in our teacher education program may be considered next.	new students, and recruitment of new or replacement faculty. Discussions among various science departments (Biology, Chemistry, Physics), and individuals from the College of Education, were begun in FY 2006 to weigh the merits of these various proposals. Chemistry faculty members also participated in the development of grant proposals by Dr. Paul Adams to seek ways to improve teacher education in the sciences. It is expected that course change approvals, new course proposals, and/or teacher workshops will

# **IV.** Supporting Materials

## A. Department Degree Program Affinity Diagram(s)

Department of Chemistry
Affinity Diagram for Baccalaureate (B.A./B.S.) Program

Characteristics of Chemistry Program	Expected Learning Outcomes	Curriculum	Assessment Approach and Methods	Results	Curricular and/or Pedagogical Changes
Knowledgeable Chemists must have an extensive base of fact, terminology, and theory in order to interpret results and solve problems. Analytical/Precise Chemists must use higher level reasoning skills to solve problems without allowing imprecise data to interfere. Dedicated/Patient Chemists must deal with problems that do not meet immediate success. Creative/Resourceful/ Innovative Chemists solve experimental	Goal A to become highly proficient in laboratory techniques used in research in chemistry Objective #1 to make experimental observations Objective #2 to manipulate common laboratory apparatus Objective #3 to operate common instrumentation and to properly use results in experimental work Objective #3 to develop the skill necessary to acquire experimental data directly by computer Objective #3 to interpret experimental results and use the data to make valid inferences Coljective #3 to acquire the ancillary skills that are required of a practicing chemist Objective #1 to solve chemical problems of both a theoretical and experimental nature Objective #3 to retrieve chemical problems of both a theoretical and experimental nature Objective #3 to retrieve chemical aproblems of both a theoretical and experimental nature Objective #3 to communicate scientific findings in writing and/or orally Objective #4 to be proficient in the application of computer technology to solve chemical	Program Core Curriculum Infroduces the discipline CHEM 101 Orientation to Chemistry Develops knowledge and problem-solving CHEM 120 University Chemistry I CHEM 120 University Chemistry II CHEM 240 Organic Chemistry II CHEM 340 Organic Chemistry II CHEM 340 Organic Chemistry II Develops laboratory and experimental Skills CHEM 120L Univ. Chem. Laboratory II CHEM 200 Chemical Analysis CHEM 3420 Organic Chemistry II Develops Chemical Analysis CHEM 3420 Organic Chemistry II CHEM 200 Univ. Chem. Laboratory II CHEM 200 Chemical Analysis CHEM 3400 Organic Chem. Laboratory II CHEM 3400 Organic Chem. Laboratory II CHEM 3400 Organic Chem. Laboratory II CHEM 3401 Organic Chem. Laboratory II Develops Scientific Communication skills CHEM 3500 Cheminar in Chemistry CHEM 3500 Unganic Chem. Laboratory II Develops scientific Communication skills CHEM 3500 Unganic Chem. Laboratory II Develops knowledge and problem-solving Skills MATH 331 Cellus Methods PHYS 111 Physics I PHYS 111 Physics I PHYS 111 Physics I Laboratory PHYS 1112 Physics I Laboratory PHYS 112 Physics I Laboratory CHEM 4300 Survey of Physics I Laboratory Survey CHEM 4300 Survey of Physics I Laboratory Survey CHEM 4300 Survey of Physics I Laboratory Survey CHEM	<ul> <li>WRITTEN EXAM: Iowa Placement Chemistry Aptitude Examination is administered to all students who take CHEM 120, University Chemistry I. The results are used as a measure of the starting level for chemistry majors.</li> <li>WRITTEN EXAM: American Chemical Society Cooperative Examinations are administered at the conclusion of several courses in the core, B.S., and B.A. curricula. The results are used to compare the performance of FHSU chemistry majors to the performance of other students on nationally standardized exams.</li> <li>PROGRAM AUDIT: A program audit that includes the course prospectus, final comprehensive examination, chemistry majors' grades and final exam scores and a class</li> </ul>	See Appendix 1 for typical results from Standardized Exam	
and theoretical problems using a core of knowledge and available resources. Objective/Intellectually Honest Chemists must view all data without bias and must rigorously adhere to the premise that all data are reported without alteration. Curious/Inquisitive Chemists rely on experimentation to obtain information and test all inferences.	word processing, and spreadsheets Goal C to attain a theoretical background which provides an understanding of the discipline Objective #1 to be thoroughly based in the major areas of chemistry Objective #2 to use basic knowledge to explore the interdisciplinary areas of chemistry Objective #3 to apply chemical knowledge to appropriate problems in the other natural sciences Objective #4 to relate chemical knowledge to other scientists as well as to non-scientists <b>Goal D</b> to instill scientific methodology in learners Objective #1 to be objective in the evaluation of data Objective #2 to demonstrate leadership characteristics Objective #3 to maintain intellectual honesty	B.S. Curriculum Bevelops knowledge and problem-solving skills MATH 234 Analytic Geometry and Calc. II MATH 235 Analyt. Geometry and Calc. II PHYS 211 Physics for Sci. and Engin. I PHYS 212 Physics for Sci. and Engin. II CHEM 632 Physical Chemistry II CHEM 634 Physical Chemistry II CHEM 656 Instrumental Analysis Develops laboratory and experimental skills PHYS 2121. Physics for Scientists and Engineers I Laboratory PHYS 2122. Physics for Scientists and Engineers I Laboratory PHYS 212. Physics for Scientists and Engineers I Laboratory I CHEM 632. Phys. Chem. Laboratory I CHEM 6341. Phys. Chem. Laboratory I CHEM 656. Instrumental Analysis Lab. Develops the knowledge required to be educated Foundation Studies Component	average of the final exam is maintained for each required chemistry course. <b>CAPSTONE COURSE:</b> CHEM 675, Seminar in Chemistry, challenges the students to research, organize, and present seminars during their senior year. The entire chemistry faculty have input into the grading of the students in this course. <b>ALUMNI SURVEY:</b> All students who graduate with a degree in chemistry are surveyed two years after their gradation. The results are used to improve the program.	See Appendix 2 for Results of Capstone Course. In the most recent Alumni Survey, 100% of alumni would recommend FHSU Chemistry programs to a son or daughter.	

# B. Department Staffing Plan College of Arts and Sciences

# Department Staffing Plan and Assignments 2007 Fiscal Year

# **Department of Chemistry**

# **Date Prepared – June 2006**

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Current	Faculty Member	Faculty	Retirement	Assigned	Rank	Degree	Track
Department		Expertise	(Birthdate)	Instructional	Current Date	Completed	
Needs				FTE			
Analytical	Olmstead	Analytical	08/08/1967	1.0	Assistant 2002	Ph. D.	Tenure
General		Inorganic			Professor		Track
Environmental							
Biochemistry	Nicholson	Biochemistry	11/22/1941	1.0	Professor 1984	Ph. D.	Tenured
General		Organic					
Conoral	Dumpol	Inorgania	02/17/1026	1.0	Drofossor 1068	Dh D	Tonurad
Inorgania	Kuniper	Dhysical	03/17/1930	1.0	F10108801 1908	FII. D.	Tenureu
morganic		Filysical					
General	Scott	General	03/11/1945	0.5	Instructor 2000	M.S.	Temporary
							1 2
<u> </u>	** 1	<u> </u>	00/10/10/20	0.5 (1.1.1.)	D 0 1005		<b>—</b> 1
Organic	Hohman	Organic	08/18/1952	0.5 (Admin),	Professor 1997	Ph. D.	Tenured
General				0.5 (Instruct)			
Physical	Donnelly	Physical	10/31/1964	1.0	Assistant 2003	Ph D	Temporary
General	Donneny	riiysicai	10/51/1901	1.0	Professor	111. D.	remporary
General					110103501		
Organic	Dorn	Organic	09/05/1961	1.0	Associate 2001	Ph. D.	Tenured
General		-			Professor		
Biochemistry	Wiese	Biochemistry	01/09/1964	1.0	Associate 2002	Ph. D.	Tenured
General					Professor		

## C. Bibliography of Departmental Scholarly Activity

- J. A. de Gouw, C. Warneke, A. Stohl, A. G. Wollny, C. A. Brock, O. R. Cooper, J. S. Holloway, M. Trainer, F. C. Fehsenfeld, E. L. Atlas, S. G. Donnelly, V. Stroud, and A. Lueb; Volatile organic compounds composition of merged and aged forest fire plumes from Alaska and western Canada; *J. Geophys. Res.*, 111, doi:10.1029/2005JD006175.
- S. S. Brown, J. A. Neuman, T. B. Ryerson, M. Trainer, W. P. Dubé, J. S. Holloway, C. Warneke, J. A. de Gouw, S. G. Donnelly, E. Atlas, B. Matthew, A. M. Middlebrook, R. Peltier, R. J. Weber, A. Stohl, J. F. Meagher, F. C. Fehsenfeld, A. R. Ravishankara; Nocturnal odd-oxygen budget and its implications for ozone loss in the lower troposphere; *Geophys. Res. Lett.*, 33, L08801doi:10.1029/2006GL025900.

- C. Warneke, J. A. de Gouw, A. Stohl, O. R. Cooper, P. D. Goldan, W. C. Kuster, J. S. Holloway, E. J. Williams, B. M. Lerner, S. A. McKeen, M. Trainer, F. C. Fehsenfeld, E. L. Atlas, S. G. Donnelly, Verity Stroud, Amy Lueb, S. Kato; Biomass Burning and Anthropogenic Sources of CO over New England in the Summer 2004; Accepted for publication
- A. S. Mertl-Millhollen, H. Rambeloarivony, W. Miles, V. A. Kaiser, L. Gray, L. T. Dorn, G. Williams, H. Rasamimanana; The Influence of Tamarind Tree Quality and Quantity on *Lemur Catta* Behavior; chapter in *Ringtailed Lemur Biology*; Springer-Verlag, publisher; New York, 2006.

#### D. Department Program Assessment Results

- 1. [See Appendix 1, Raw Scores on Standardized Exam.]
- 2. [See Appendix 2, Scores for Capstone Course CHEM 675 Seminar in Chemistry.]
- 3. [See Appendix 3, Department of Chemistry Faculty Contact Hours per Week.]
- 4. [See Appendix 4, Total Laboratory Contact Hours for B.S. Degrees in Chemistry at Kansas Regional Universities.]

#### E. Other Departmental Information

In May, 2003, a chemistry consultant from the American Chemical Society, Dr. Conrad Stanitski, visited the FHSU campus to review our Chemistry degree programs and recommend possible curricular improvements. In his report received in FY 2004 Dr. Stanitski had several complimentary things to say about the FHSU Chemistry Department. In particular, he described Tomanek Hall as "an attractive facility with much to offer for the teaching and learning of chemistry", and commented about the "modern technologies and easy access to them". With regard to the instruction of our Chemistry students he complimented the "personal attention from faculty members, who have diverse backgrounds in their graduate training and chemical expertise". He also noted that "several chemistry faculty have been highly successful in obtaining outside grants from significant funding sources". With regard to our staff members in Chemistry he noted that they are "experienced and well qualified for their responsibilities", and complimented their work in chemical waste storage and removal, budget oversight and reconciliation, and record-keeping. Finally, he noted as a positive sign the new faculty members in Chemistry and the consequent increase in research opportunities for our students. While he certainly had suggestions for improvements of our degree programs (which form the basis for the first of our Long-Term Strategic Initiatives, as noted above), Dr. Stanitski's report is viewed as an outside affirmation of much of what the Chemistry Department has to offer.

## F. Special AQIP Report

Student No.	Spring, 2004	Spring, 2005	Spring, 2006
1	62	53	43
2	46	37	30
3	47	44	50
4	48	56	36
5	38	53	33
6	34	47	60
7	33	52	55
8	29	55	56
9	42	38	27
10	45	33	34
11	36	40	51
12	36	35	61
13	55	40	32
14	43	48	29
15	59	33	
16	35	31	
17	36	25	
18	40	46	
19	37	47	
20	31	27	
21		51	
22		34	
23		40	
24		43	
Mean Score	41.60	42.00	42.64
Std. Dev.	9.12	8.99	12.43

#### Appendix 1; Raw Scores on Standardized Exam\*, Department of Chemistry

\* American Chemical Society Cooperative Exam in Organic Chemistry, Form 2002. (Note: this exam is usually administered at the end of the sophomore-level chemistry course.) Maximum score possible = 70.

## **Appendix 2:** Scores\* for Capstone Course CHEM 675 Seminar in Chemistry

Student No.	Fall, 2003	Spring, 2004	Fall, 2004	Spring, 2005	Fall, 2005	Spring, 2006
1	210.69	239.25	201.9	250.4	234.5	239.7
2	233.93	262.26	225.31	248.2		233.5
3	248.38	227.82	234.36			206.3
4	264.52	266.2				206.4
5	262.17	233.94				244.4
6		249.4				
Mean Score	243.94	246.48	220.52	249.30	234.50	226.06
Std Dev.	22.26	15.52	16.75	1.56		18.40

\* Maximum score possible = 280

Faculty Member	Fall, 2003	Spring, 2004	Fall, 2004	Spring, 2005	Fall, 2005	Spring, 2006**
1	17	19	17	18	16	20
2	14	19	14	9	15	19
3	14	17	17	15	17	17
4	19	21	13	15	17	19
5	19	19	16	13	16	16
6	16	17	13	16	14	
Mean Contact Hrs	16.50	18.67	15.00	14.33	15.83	18.20
Std. Deviation	2.26	1.51	1.90	3.08	1.17	1.64 **One faculty member on sabbatical this semester.

#### Appendix 3: Department of Chemistry Faculty Contact Hours per Week\*

\* Full-time faculty members, excluding chair. Note that American Chemical Society guidelines specify no more than 15 contact hours per week.

# **Appendix 4:** Total laboratory contact hours per week for B.S. degrees\* in Chemistry at Kansas regional universities

	<u>FHSU</u>		<u> </u>	SU**	<b>PSU</b> ***	
	Course No.	<b>Contact Hours</b>	Course No.	Contact Hours	Course No.	Contact Hours
	120L	4	124	3	216	4
	122L	4	127	3	226	4
	250L	6	377	3	326	4
	340L	5	573	3	336	4
	342L	5	575	3	446	4
	632L	4	721	3	594	4
	634L	4	777**	2		
	656L	6				
Grand Totals:		38		20		24

\*Only courses within that major field are listed. Hours listed are for the simplest set of options and the fewest possible courses in the major.

\*\*B.S. in Chemistry, non-ACS-accredited. Undergraduate research (1 cr. hr.) required. Lab hours estimated for CH 777.

\*\*\*B.S. in Chemistry, Option II. Advanced Chemistry elective also required.