



Instructional Program Review Summary 2003-2004

Instructional Area: **Transfer**

Department: **Mathematics and Science**

Discipline: **Chemistry**

March 11, 2004

Instructional Program Review Summary

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NOTE: An external reviewer should not be required to refer to the documentation notebook to understand the Instructional Program Review

Summary. Rather, data should be clearly cited in the summary so that the reviewer can easily find the source documents if needed.

EXECUTIVE SUMMARY

Use the following guidelines to provide a concise overview/summary of the program review contained in this report.

Write a brief description of the goals and objectives of the discipline.

The goals and objectives of the chemistry discipline are:

- to provide students a solid foundation in the principles of general and organic chemistry for transfer to baccalaureate degree programs

- to prepare students for successful completion of two-year Associate degree programs

- to help students meet their science education requirements in college programs

- to assist students to think critically and to apply the basic knowledge, skills and principles of chemistry to everyday life and their chosen careers.

Overview of how the program review was conducted.

An Instructional Program Review committee, headed by a full-time chemistry faculty and consisting of full-time and adjunct faculty from chemistry and other disciplines, students and employees of ACC, was first formed. The committee met several times to:

- review and analyze program information including previous IPR Summary Report and SWOT results, previous program assessment plans, previous annual action plan follow-up reports and data provided by the Office of Institutional Effectiveness

- identify program strengths, weaknesses, opportunities and threats (SWOT)

- make program improvement recommendations that include action plans and resource allocation needs based on the findings of the review

- complete the IPR Summary Report, the Program Status and Quality Improvement Plan forms

- share all reports with the Department faculty, Chair and Dean

- submit the IPR Summary Report to the Office of Institutional Effectiveness for necessary actions.

Summary of findings:

Progress on previous program review recommendations.

The immediate past program review for chemistry was done in 1999. Important recommendations that were put forward as vision for chemistry in that program review include the following:

- to have the two new campus locations at Eastview and Pinnacle up and running

- improvement of safety measures in labs

- an improvement of alliance with UT-Austin for a Peer Teaching Assistant program

- hiring of more full-time professors and lab assistants

- more computers, sophisticated chemical instruments and other technological supports

- more lab spaces

- need for more budget allocations, especially for big ticket chemical equipment

- a better success rate for students in chemistry courses, and a better transfer rate to four-year college programs

The two new campus locations that were envisioned for chemistry are now in operation at Pinnacle (with the posting of a full-time faculty in charge) and at Eastview (with adjunct faculty teaching). Considerable progress has been made with respect to lab safety, and necessary action plans are

being taken for continuous improvements. Regarding the alliance with UT for Teaching Assistant Program, some progress has been made and an NSF grant of some \$300,000 has been achieved by our dedicated faculty for collaborative work with other four-year institutions for the development of a Teacher Education Program at ACC, and more is underway. Two full-time chemistry faculty have been hired since the last program review, but more full-time faculty and lab assistants are needed. With respect to technological supports, there has not been much progress in buying the needed sophisticated chemical instruments, because of lack of funding. The creation of lab facilities at Pinnacle and Eastview has helped meet some of the needs of lab spaces, and the development of lab rooms in the proposed Southeast campus will also be helpful in this respect, but with the proposed development of new chemistry courses and expansion of the existing ones, there will be need for creation of more lab facilities.

Program strengths. The strengths of the chemistry program lie in highly qualified faculty and good instruction, strong curriculum and course objectives, appropriate lab facilities and teacher/student ratio in lab instruction, multiple campus locations for course offerings and easy accessibility by students.

Areas for improvement. Areas that need improvement include modernization of lab equipment, hiring of more full-time faculty, completion and retention rate of students in courses, communication and coordination among faculty and staff and campuses, development of distance learning/hybrid courses, design of chemistry courses specifically for students in allied health science area, offering of organic chemistry courses at PIN and CYP campuses, safety concerns, not enough control and oversight responsibility given to faculty over spending of budget money by lab assistants.

Key planning issues. The key planning issues include hiring of more full-time faculty, purchase of modern lab equipment, offering of one or two courses specifically designed to meet the needs of students in allied health science programs, building of instructional facilities at the new South Campus, expansion of the existing chemistry programs and facilities to offer more courses at all campuses, especially to offer Organic Chemistry courses at PIN and CYP, improvement of student retention, completion and mastery levels, development of Distance Learning/Hybrid chemistry courses.

Conclusions: What are the major conclusions regarding the present state of the program?

The chemistry program is based on sound curriculum and course objectives, with high quality instruction to meet the needs of students and community. Many of

the students who take chemistry courses either complete an associate degree from ACC or transfer to four-year institutions to further their academic goals that benefit individual students as well the local community and economy. Multiple sections of all courses are offered at each campus location at various hours of days and evenings in order to make it convenient to students and easily accessible to the entire community, thus minimizing the hardship of time conflicts and unnecessary distance barriers. The faculty are highly qualified and dedicated to their job. The curriculum and course objectives are reviewed periodically and kept current. The faculty and staff engage themselves in professional development activities on a regular basis to keep them up to date and proficient in their job functions. The department maintains academic standards and integrity by using common course syllabus and course objectives, with academic freedom and flexibility given to each faculty for student assessment via tests, quizzes and final exams. The department also employs very objective evaluations for all faculty and staff annually, and makes recommendations for performance improvement for its employees, when needed. The available resources are utilized efficiently, with some faculty taking more advantage of the available technology than others. The chemistry program is very competitive with regard to performance, costs to students, and enrollment with other state and private institutions in Texas. However, as part of the continuous improvement and expansion of the chemistry programs, the department needs to focus on many key issues and areas of weaknesses that need considerable attention, planning and resource allocation for the coming years, which are identified and presented under "Recommendations" below.

Recommend future directions for the program based on this review:

- Expand services
- Maintain services
- Reduce services
- Close program

Recommendations: Summarize the self-study's recommended actions for improving the quality of the program.

Recommended actions from the Chemistry Self-Study Committee:

- Purchase new and modern lab equipment.
- Develop and offer one or two chemistry courses specifically designed for students in allied health science programs.
- Build lecture and lab instructional facilities for the proposed South Campus.

- Expand program to offer more courses in all campuses, especially Organic Chemistry at PIN and CYP.
- Hire more full-time faculty and lab assistants.
- Improve student retention and course completion rates.
- Improve communication and coordination among faculty, staff and campuses.
- Plan to develop and offer chemistry courses in Distance Learning/Hybrid programs.
- Improve Lab Safety.
- Improve liasion and cooperation with other institutions.
- Improve budget efficiency and use of available resources by giving faculty and Lab Coordinators more control over spendings by Lab Assistants.

SELF-STUDY TEAM PARTICIPANTS

List the names of people who participated in the review and their association with your program.

Name **Matiur Rahman** ACC Faculty Industry Representative
 Student

Name **Ya-Ping Huang** ACC Faculty Industry Representative
 Student

Name **Bill cheek** ACC Faculty Industry Representative
Student

Name **Steve Muzos** ACC Faculty Industry Representative
Student

Name **Sarah Strong** ACC Faculty Industry Representative
Student

Name **Barbara Dukette** ACC Faculty Industry Representative
 Student

Name **Daniel Johnson** ACC Faculty Industry Representative
 Student

Name ACC Faculty Industry Representative Student

PROGRAM DESCRIPTION

Provide a brief description of the overall history, major developments and current objectives for your program (limit to 500 words).

Austin Community College (ACC) was established in December 1972 by voters of the Austin Independent School District (AISD). Classes began on September 17, 1973 with 2,363 students.

Chemistry courses were among the first offered by ACC. Dr. James Archer, the only full-time chemistry faculty at the time, led the chemistry department during its early years. In the 1974-75 academic year, ACC offered eleven different chemistry courses: Essentials of General and Biological Chemistry, Fundamentals of Chemistry I & II, General Chemistry I & II, Organic Chemistry I & II, Quantitative Analysis I & II, Nuclear Chemistry, and Directed Study. However, the curriculum was still evolving, and only six courses were offered during the 1976-77 school year (Fundamentals of Chemistry I & II, General Chemistry I & II and Organic Chemistry I & II). General Organic Chemistry with a Pharmacology emphasis was added during 1978-79. Fundamentals of Chemistry I & II were cut from the curriculum in 1982, and Introduction to Chemistry was

subsequently added in 1985. The curriculum has remained fixed since that time, and the Chemistry Department today offers five courses: Introduction to Chemistry, General Chemistry I & II, Organic Chemistry I & II.

The chemistry department has grown dramatically over the past thirty years. When Austin Community College first began, Chemistry was offered only at the Rio Grande and Ridgeview campuses. Today, chemistry courses are offered at all five major campuses. The number of students, class sessions, and faculty has similarly expanded. In 1980, there were 643 students registered in 18 lecture sessions and 685 students enrolled in 30 lab sessions. Today (Spring 2004), there are 1331 students in 76 16-week combined lecture/lab sessions and 50 students enrolled in two 12-week sessions. The ACC Chemistry Department now has ten full-time faculty, who teach almost half of all classes, and the rest are taught by 21 part time faculty.

ACC students have traditionally taken chemistry courses to fulfill degree requirements for other disciplines, and the number of students pursuing Associate degrees in Chemistry has remained low. Most chemistry students eventually transfer to 4-year colleges to pursue degrees in engineering, health science or computer science rather than chemistry or other physical sciences.

Chemistry is a quantitative science with a heavy emphasis on laboratory experience. Our lab facilities, equipment, and overall safety have improved significantly over the years. The Chemistry department now has a dedicated safety officer, and all faculty and lab personnel undergo periodic safety/hazardous waste training. Waste disposal procedures have been streamlined and posted in each lab, and MSDS and WACI, which provide standardized chemical safety and inventory information, are now routine features in the lab.

The Chemistry program at Austin Community College is designed to provide students with the first two years of college chemistry education, from introductory general chemistry through organic chemistry. The Chemistry Department has made tremendous progress in the last three decades but is continuously striving to serve its students and the local community more effectively.

STRENGTHS, WEAKNESSES, OPPORTUNITIES, THREATS (SWOT)

List the names of people who participated in the SWOT and their association with your program.

Name **Matiur Rahman** ACC Faculty Industry Representative Student

Name **Ya-Ping Huang** ACC Faculty Industry Representative Student

Name **Bill Cheek** ACC Faculty Industry Representative Student

Name **Steve Muzos** ACC Faculty Industry Representative Student

Name **Sarah Strong** ACC Faculty Industry Representative Student

Name **Barbara Dukette** ACC Faculty Industry Representative Student

Summarize the findings of the SWOT analysis. Focus on the top 5 or 6 issues and answer the following questions:

Strengths: In what does your program excel?

Class Size: Small class sizes, and smaller than two of our neighboring competing institutions, UT-Austin and Texas State University, offer one of the very important strengths of the chemistry program at ACC. Small class sizes offer students with a good teacher/student ratio both in lectures and labs for better teacher/student contact and more effective learning environment.

Accessibility: ACC's open-door policy, good support for disabled students, relatively low expense, and departmental flexible class meeting hours, course offerings at multiple campuses spread throughout the city and centers in and around many city locations, allow good accessibility to all members of the community with diverse socio-economic and ethnic backgrounds.

Faculty: Highly qualified and dedicated faculty with diverse educational and ethnic backgrounds, with easy access to students and care and concern for students' performance constitute one of the important strengths of the chemistry program at ACC.

Safety: Standardized safety and waste control program, with on-going HazCom training for the whole department, good lab safety record, and efforts for

continuous improvement of safety practices are a reflection of the strength of the chemistry program, and an improvement from the past period of program review.

Tutorial Services: Hiring and retention of good and qualified tutors in the Learning Labs at all campuses provide a great help to students for their success in the program.

Transfer Rates: Success rates are improving for transfer students, and students who graduate from ACC successfully transfer to four-year institutions.

Labs: Labs are well-equipped according to the limited available resources, and properly maintained, with some new lab facilities added (at Pinnacle and Eastview campuses) since the last program review.

Curriculum: The chemistry curriculum is strong and well-organized, with the Introductory Chemistry course, CHEM 1405, being a help to many students who did not have any prior chemistry backgrounds. The curriculum is structured in a way that allows students to move successfully from lower level to higher level chemistry courses without any difficulty, and facilitate their transfer to four-year institutions.

Course Objective: The program has good and detailed course objectives for all courses that are comparable with those of other institutions for similar courses. The course objectives are posted on the college web-site as well as in all course syllabi and are common across all campuses.

Library Resources: The chemistry program has good resource materials in all campus libraries.

Instructional Resources and Technology: The program uses good text-books and electronic technology in classrooms, including Multi-media, PowerPoint, teaching/learning tools, such as CD-ROMs, AWOL, Blackboard programs, etc.

Weaknesses: What are the aspects of your program, which, if not addressed, will impede the area's future?

Curriculum: With only five courses offered, the chemistry program is not broad enough to meet the needs of the community, especially lacking in service courses for other programs at ACC. Specifically, the program needs to offer chemistry courses designed for Allied Health Science program, and possibly also some application-based chemistry courses.

Lab Equipment: The program lacks modern and sophisticated chemical instruments to improve the quality of the program, and more lab facilities to cope with the rapidly growing student population.

Student Success: Student drop-out and non-mastery rates are quite high, and either unprepared or under-prepared students are allowed in chemistry courses without adequate pre-requisites for enrollment to chemistry courses.

Insufficient Sections: Many students are turned away because enough sections are not offered to meet student and community demands.

Departmental Policies: Coordination among various campuses needs to be improved, and course objectives should include lab components also for all courses.

Student Assessment: The program lacks a uniform grading standard and communication with Workforce area.

Faculty: The discipline needs at least three more full-time faculty to improve quality of the program.

Technology: The department is not taking full advantage of available technology for teaching/learning including lack of Distance Learning, and only a few members of the faculty have web-sites.

Other: Other weaknesses include lack of proper mentoring for the new and adjunct faculty and lack communication between full-time and adjunct faculty, lack of coordination between lecture and lab topics for most courses.

Opportunities: What factors does your program need to take advantage of in order to enhance the quality of the area?

Curriculum: The program offers a great opportunity for growth and expansion of the curriculum through offering of chemistry courses for Allied Health Science program as well as other application based chemistry courses to meet the needs of other disciplines within ACC and to expand and improve our service to the students and community. There is also opportunity to offer Distance Learning and/or Hybrid chemistry courses to improve accessibility of our program to all residents of the community. The Pinnacle, Cyprus and the proposed South campuses present opportunity to offer more courses, specifically organic chemistry at Pinnacle and Cyprus and Introductory Chemistry at the South Campus. There is also opportunity for the chemistry program to engage students more in developing their skills in critical thinking, problem solving and scientific literacy.

Alternate Modes of Instruction: Opportunity exists for the chemistry program to develop and offer Hybrid courses through Distance Learning. There is also opportunity for the program to use more technology in delivery of instruction, such as multi-media, web-based tutoring, and on-line advising to guide students into courses that match their abilities.

Collaboration with Universities and Industries: The chemistry program has ample opportunities for collaboration with the neighboring institutions, such as UT-Austin and Texas State University, and for partnership with the local industries in a mutually beneficial manner, especially to help our students gather real life work experience through internship programs at neighboring research institutions and industries.

Internal Collaboration: The program has opportunities for collaboration with other disciplines, such as Semiconductor, Biology, Biotechnology, Environmental Science within ACC, to develop courses that would serve the needs of those disciplines and hence provide a vehicle for the growth and expansion of the chemistry program.

New and Adjunct Faculty Mentoring: There is opportunity and need for streamlining the mentoring program for new full-time and adjunct faculty in Chemistry.

Learning Labs: The chemistry has ample opportunities to use the technology available in learning labs and to improve and expand the tutorial services.

Department Policies: The program has opportunity to make better use of lab facilities college-wide, to develop standardized exams by course, to bring more uniformity in coverage of topics in Introductory Chemistry course.

Tracking Students: The program or the College has opportunity as well as need for tracking those students who complete chemistry courses, and make the data available for future planning, development and improvement of the program.

Faculty Development: The program has opportunities for offering more in-house faculty development seminars and workshops, especially involving presentations from the experienced faculty.

Threats: What are the external factors that could negatively impact your program's future?

Funding: The program currently does not have any funding to buy expensive chemical instruments to upgrade our lab instructions. If adequate funding needed for upgrading and modernization of the chemical equipment and creation of other lab facilities are not obtained in a timely and regular fashion, there is a threat of deterioration of the quality of the chemistry program.

Budget Management and Supervision: Mismanagement or lack of priority in spending could also pose threats to the future development of the program. At present, the department chair/ budget officer allocates a certain amount of funds to a lab assistant for each campus, and the lab assistants spend the money as they feel appropriate and report back to the budget officer only. Most of the faculty does not have any clue to how the spending priority is ascertained and/or how much money is still available at any given point of time. There has to be a mechanism for positive inputs of faculty at each campus on how the departmental budget monies are spent; otherwise there is a risk of budget mismanagement that could pose threats to departmental priorities in planning and development efforts.

Full-time faculty: If at least three more full-time instructors are not hired over the next three years, there is a risk of quality deterioration for the program, especially because of the proposed expansion of chemistry program to meet the needs of Allied Health sciences programs, and because of the proposed start of classes at South campus in Fall/2005 and addition of organic chemistry courses at PIN and CYP campuses in Fall/2006.

Salaries and Benefits: If faculty/staff salaries and benefits are not improved, hiring and retention of qualified employees, especially qualified teachers will be difficult, which may result in deterioration of program quality and reputation.

Safety: The discipline of chemistry currently has good policy and practice of safety at workplace. However, any lack of appropriate safety measures, especially with regard to chemical waste management and disposal of hazardous materials could pose possible threats to the program. If the frequently reported mercury problems at RGC and sporadic reports of molds in other campuses are not remedied in a timely manner and minimized or prevented for the future, there is possibility of threat and damage to the program.

ACC Policy: Lack of college policy and priority with regard to maintaining a higher ratio of full-time/part-time faculty specifically for the chemistry area would cause the proposed growth, expansion and quality of the program to be hampered.

Department Policies: Lack of a consistent student assessment and grading standard across the campuses (for all courses) may cause the instructional standards to suffer in quality and uniformity.

Discuss changes from the program's previous SWOT analysis.

There has been considerable improvement in safety standards and practices since the last program review. Currently, the Department has a full-time faculty who performs the job as a Chemistry Safety Officer. The Department also

arranges regular safety training seminars and workshops throughout the year involving instructors and lab assistants, and it is an on-going process.

Two new full-time instructors were hired since the last program review, but the Department has also lost one full-time faculty recently due to death. Currently, the Department needs at least three more new full-time instructors to bear the load of instruction, expansion and quality improvement.

The PIN and EVC campus labs are in operation since the last program review. There is now a full-time faculty in charge of instruction and lab facilities at PIN, which has resulted in improvement of community accessibility, student demand and satisfaction in this locality. However, there is a need for direct presence of a full-time faculty at EVC and the proposed South campus for a more efficient oversight of the chemistry program in these campuses.

The budget situation has not improved, especially with respect to the modernization of chemistry instrument facilities, in spite of strong recommendations in the last program review. The Department is in dire need of money to buy sophisticated chemical instruments to improve program quality and make our program competitive with those of other institutions.

Student retention and completion rates still continue to be a problem even after the last program review. However, this program review makes some recommendations to address this problem from a more realistic point.

Since the last program review, some important new opportunities for growth and expansion of the Chemistry program have also been created. Currently, there is a great demand from the Allied Health Sciences programs for a chemistry course that would address the specific needs of students in those programs. Also, since the lab at PIN campus is not fully utilized to its maximum capacity, there is room for adding more sections of the existing courses, along with the proposed addition of one section of organic chemistry at this campus each semester. The same sort of expansion opportunities possibly exist for CYP campus, too.

ANALYSIS

[a] Relevance of the program to College mission and desired ends

Mission:

Review the program's purpose statement. Verify that the statement is current and accurate and reflects the mission of the college as a whole or update the purpose statement.

The Self-Study team reviewed the program purpose statement and found (select one):

The purpose statement is current, accurate, and reflects the mission of the college.

The purpose statement was revised as shown below:

Desired Ends (Board Policy A-2. Intended Outcomes)

How well does the program support the intended outcomes of the college by providing “service-area adults with the postsecondary and higher education they need and can use for productive useful lives?”

The chemistry program continues to offer students and community an opportunity to take quality chemistry courses for an Associate of Science or Associate of Applied Science degree from ACC in a number of job-oriented disciplines, or to transfer to four-year institutions for a variety of career-oriented academic programs, such as nursing, pharmacy, medical and dental programs, engineering, environmental science, semiconductor technology, or to learn basics of science so that they can make informed quality decisions as responsible citizens.

In what ways does the program demonstrate an open, responsible exchange of ideas?

Chemistry Department faculty and staff meet frequently to discuss openly and freely all issues and ideas impacting the program, and makes most of its decision through exchange of views and finally by freely voting on each issue in which there were differing ideas and opinions from different individuals. There is also extensive email communication for exchange of ideas and dissemination of information relevant to the program.

In what ways does the program provide an open door to educational potential?

ACC's open-door admission policy is the main vehicle through which the chemistry program advances its open door educational potential. Chemistry Department regularly offers multiple sections of a course entitled "Introduction to Chemistry" in all campuses and in many ACC Centers that allows anyone without any pre-requisite or previous chemistry background to enroll in it. This course prepares students for transition to a higher level chemistry/science courses. There is also a well-structured tutorial program available at all campuses, that facilitates the unprepared and under-prepared students to make smooth progress in chemistry/science courses.

In what ways does the program take targeted action to address internal needs within available resources?

Chemistry department takes appropriate actions and decides priorities of all issues after due consultations with faculty and staff to meet all departmental needs. Specifically, the Department Chair in consultation with the faculty decides how many courses to be offered, how many sections of each course at each campus, at what times and days, and who will teach those sections. Moreover, the department decides what equipment and supplies are needed and how much or how many in each campus within our budget and available resources and also pools resources among different campuses, if needed. Also, the department takes actions about updating the course syllabus, course objectives and anything else needed to meet the internal needs and improve the quality of program.

In what ways does the program demonstrate a commitment to integrity and exemplary standards?

The Department provides guidelines to all members of the department regarding quality instruction, safety and individual performance within the college established policy, and tries to tackle and correct any irresponsible or inappropriate actions by any individual. Moreover, there are formal and informal performance evaluations for all employees of the department to indicate their strengths and weaknesses, along with recommendations for any needed performance improvement.

In what ways does the program demonstrate personal and professional ownership that generates accountability?

The members of the department are given academic freedom and enough flexibility to perform their jobs, and also an opportunity to correct their own problems or shortcomings first, before taking any formal actions. The employees are also appreciated for the good work that they do, and encouraged to have pride in their good performance.

[b] Responsiveness to community needs and satisfaction of community demand

In what ways does the program address a verifiable need for the student, community, and society?

The program offers multiple sections of the high demand courses, CHEM 1405, CHEM 1411, and CHEM 1412, at all campuses and also in some ACC centers. The department also offers two organic chemistry courses at RGC, NRG and RVS campuses because of existing student needs and facilities available at those campuses. Since, there is now a growing need and demand from students and community for organic chemistry courses at other campuses, Chemistry Department is planning to offer these courses at PIN and CYP campuses in the near future. The chemistry classes are being offered at morning, afternoon, and

evening hours during the week days and also some in weekends for the sake of convenience and accessibility by all students. In order to address the needs of society and community, chemistry department offers service courses to meet the needs of other disciplines within the college. Most importantly, Chemistry Department serves the needs of the community for chemistry courses that they are required to take to complete a two-year degree at ACC in Applied Science, Nursing, Dental Hygiene, Engineering Technology, Environmental Science, Semiconductor Technology, etc., and thus help them enhance their career prospect, or transfer to a four-year institution to further their academic programs.

Describe the results of the program's most recent assessment of community need.

Although there is not any available data or quantitative information on recent assessment of community need, Chemistry department has received numerous requests from Biological and Allied Health Science programs for offering a chemistry course at multiple campuses that would meet the specific needs of students in their disciplines. There is also continuous requests from students in the Southwest part of the city to offer organic chemistry courses at PIN campus. Also, the Department is in the final stage of planning and developing chemistry courses for Teacher Education program in collaboration with UT, Texas State and other Texas institutions to meet the shortage of qualified teachers in our cities and communities.

How do the program's five-year enrollment trends compare with those of the College overall?

	FY1999	FY2000	FY2001	FY2002
CHEM	5,694	4,045	2,975	3,110
COLLEGE	170,465	165,988	169,873	180,408

Source: Budget Planning Book

[c] Accessibility to students and identification of unnecessary barriers

Analyze when and where courses are offered (by campus, time of day, mode of delivery).

See Tables C1 and C2

List the number of sections taught (by location).

See Table C3

List the number of sections closed or canceled per course.

See Table C4 and C5

How does each of the five-year demographic trends (gender, ethnicity, age group) for this program compare to the overall college trend? (List the source of your information.)

See Table C6 and C7 for Chemistry Data

See Table 4 College Credit Student Profile in ACC Fact Book.

http://www2.austincc.edu/oiepub/pubs/factbook/2002-03/fb02-03_sec04.pdf

Identify any unnecessary barriers to students, especially those who are educationally disadvantaged and not well served by other colleges.

Chemistry Department does not have any unnecessary barriers to students; however sometimes the number of sections of course offerings are limited or cut because of the college policy or restrictions, thus causing a delay in students completion of academic programs.

[d] Student outcomes including participation and successful-completion rates

How do course completion rates (A-B-C-D rates) for courses within this program compare to College norms?

Mastery and A-B-C-D rates for Fall 1999-Spring 2003 by course can be seen in tables D1-D5

Data supplied OIE for Fall 2001 show that Chemistry has the third highest non-mastery rate (38.3%) in the college behind Math (45.3%) and Biology (38.6%). College average was 31.2%. For the same time period two Chemistry courses had higher than average non-mastery Chem 1411 General Chemistry (41.4%) and CHEM 1405 Introduction to Chemistry (38.2%). 26 courses had higher than the college average non-mastery rate, 13 of which were from the Math/Science department.

What are the program completion or graduation rates (compared to intent as well as overall) for this program?

Only 2 students graduated with a Chemistry major between 1999 and 2002. Students take Chemistry as part of a requirement for another major or transfer to 4 year institutions.

How do withdrawal rates for courses compare to College norms?

Comparing figures from Fall 1997 to Fall 2001, there has been a 10% decline in the withdrawal rates from Chemistry 38%- 28.2%. The college average for the same period rose from 20.5% to 22.5%. In 1997 Chemistry had the highest withdrawal rate of the Math/Science department. In 2001 it had dropped behind Physics and Math. In fall 2001 Chemistry had the 4th highest withdrawal rate 28.2% behind Math (34.3%), Physics (31.4%) and English (28.9%)
Source: Analysis of Non-Transfer, Withdrawal, and Non-Mastery Rates, OIE.
See table D6

What do the results of the program's student learning outcomes assessments (departmental final exams, exit tests, standardized tests, etc.) indicate about the program?

Chemistry common course objectives can be found at <http://www2.austincc.edu/chem/curriculum/index.htm>.

Chemistry Department does not have departmental exit tests or standardized exams. Instructors are responsible for their own tests and finals which are reviewed in the annual faculty evaluation process.

[e] Measures of program quality and educational value added

- **Academic Standards**

What are the processes and procedures that the department uses to maintain academic standards and achieve consistency within the department?

Chemistry program has developed a strong course objective for all courses, common to all campuses, and periodically reviews those course objectives to meet the changing needs of the discipline, students and community. The department also has a common master format for all course syllabuses that are followed by all instructors at all campuses. Course Syllabuses, and tests, quizzes, final exams and other student assessment tools for all courses taught by each instructor are part of the regular faculty evaluations in order to ensure academic standards and consistency within the department.

- **Curriculum**

What procedures are used to assure that the curriculum is current and adequately meets the needs of students?

The department reviews, and renews as necessary, the curriculum and course objectives periodically to make sure that the curriculum is current and adequately meets the needs of students

Are learning outcomes defined for courses and the program? Yes No

Are course texts up-to-date?. Yes No

Are course and program listings in the ACC Catalog up-to-date? Yes No

Do all courses have up-to-date syllabi on file? Yes No

Evaluate the use of instructional resources (including those in the library).

The chemistry department encourages and engages students to use library resource materials and various available software to enhance their learning, and some instructors also use multi-media technology in classroom to enhance teaching/learning. In one course at least, CHEM 1411, the students are required to complete a library research project, based on computer, as part of the course requirements.

Evaluate the extent to which technology impacts the mode of instruction, including the number of courses and sections taught via distance learning.

Use of computer in labs, and some chemistry software and multi-media technology in classroom by some instructors is more or less all at this time the chemistry department is doing with respect to use of technology in instruction. There is no Distance Learning course offered by the program at this time; however recommendations have been made by this Program Review Committee for development and offering of Distance Learning or Hybrid chemistry courses by the department in the next two/three year period.

Evaluate the extent to which instruction is focused on problem solving, active learning, and work-based elements.

Hands-on problem solving, active learning, critical thinking analytical skills are strongly focused by all instructors in all courses through classroom instruction, homework assignment, tests, quizzes, laboratory experiments, internet and software based learning tools, and independent computer research project.

List below the current discipline-specific courses within the program and the date of the latest review.

Course	CHEM 1405	Date of Last Review	2001
Course	CHEM 1411	Date of Last Review	2001
Course	CHEM 1412	Date of Last Review	2001
Course	CHEM 2423	Date of Last Review	2001
Course	CHEM 2425	Date of Last Review	2001
Course		Date of Last Review	

- **Faculty**

Do all faculty teaching in the program meet SACS requirements?

Yes No (if no, please explain)

What is the ethnic diversity of the faculty?

See table E1

What evidence is there that faculty are staying current in their respective disciplines and instructional methodologies?

Faculty participate in professional society memberships in their discipline and instructional areas, attend seminars and workshops in their fields, subscribe to and read current discipline-related journals and magazines, and perform professional development activities in a regular fashion every year.

What recognition has been given to faculty within the last year?

None, except some casual "thank you" once in a while.

Describe professional development activities in which program faculty participate.

Faculty participate in a variety of externally-sponsored seminars, workshops and conferences to update their knowledge and exchange information and ideas related to their instructional discipline. Every faculty member is also required to participate in Departmental Safety, HazCom and Chemical Waste Management workshops. Moreover, faculty also participate in college-sponsored professional development activities. College-sponsored workshops that are open to all faculty can be found at:

<https://workshops.austincc.edu/gotoevents.asp>

What percent (and the total number) of faculty participate in formal professional development activities on a regular basis?

100%, Number =28

All adjunct faculty are required to complete 4 hours of faculty development per year. Full-time faculty are required to complete 12 hours of faculty development per year.

Describe the types of discipline-related professional development activities offered.

Web-based tutorial, homework and student assessment, HazCom, Lab safety and use of multi-media technology in instruction.

What percent of sections do full-time faculty teach?

See Table E2

What percent of contact hours do full-time faculty teach?

See Table E3

Are student evaluations of instruction within acceptable range? Yes No

To what extent are alternative modes of instruction incorporated into classes?

Use of multi-media, web-based tutorial and student homework assignment and computer research for certain projects are the most prominent alternative modes of delivery of instruction. No Distance Learning or PRN modes of instruction is done at this time.

- **Student Satisfaction**

Do student course evaluations demonstrate satisfaction with courses?

Yes No

[f] Adequacy of program resources and efficiency of resource use

Describe the overall adequacy of resources (human, technological and capitol, facilities, and fiscal) available to the program for providing effective program delivery and outcomes.

Full-time faculty is not adequate to engage more in curriculum development and expansion of services. To be more specific, RGC needs at least one more full-time to fill the vacancy created by the death of one senior faculty. Moreover, at least one more full-time faculty member position needs to be created to provide faculty oversight on all campuses, especially at the Eastview campus and the proposed South Campus which is supposed to start offering courses in Fall/2005. Additionally, one more new full-time faculty position is needed to meet the needs of the proposed program expansion and quality improvement. There is also need

for at least one full-time Lab Assistant to alleviate the burden on the existing lab assistants and improve the quality of lab instruction. Some laptop computers and PowerPoint projectors are also needed for instructors use in classrooms. The inadequacy, or non-availability, of modern chemistry equipment cannot be over-emphasized. The lab facilities are not modern enough in some campuses, especially at RGC, to efficiently perform all lab instruction, along with the HVAC problems in all campuses. Moreover, the current lab facilities are not enough to meet the growing needs of all chemistry courses and the proposed program expansion. there is also acute shortage of required capitals for purchasing big ticket chemistry equipment needed to modernize the lab instruments. However, all the limited available resources are utilized quite efficiently, with the exception that the spending priorities could be improved by facilitating the faculty and Lab Coordinators having more control over how the budget money is spent by Lab Assistants for supplies and chemicals at each campus.

What is the ratio of full-time to adjunct faculty (by course and for the program overall)?

See table F1

How up-to-date is the equipment used by the program?

Not very up-to-date, especially for the upper level chemistry courses, such CHEM 2423 and 2425. Chemistry Department is in desperate need of funds to update its equipment holdings and modernize its lab facilities.

Identify possibilities for improving the efficiency of the program's use of resources.

Let the faculty have some control over spending by the lab assistants for supplies and chemicals. Let there be some course development for Distance Learning/Hybrid courses to make a better use of the technology. Some additional training for faculty and lab assistants to use web-site and multi-media for instructional purposes will also help make a better use of available technological resources at our disposal.

[g] Comparison of program performance, price, and enrollment with that of alternate local suppliers

How is the program competitive with similar programs offered by other institutions or schools in the service area in terms of performance, cost to students, and enrollments?

Our program performance compares and competes very well with those of other local institutions, with much less cost to students compared to UT-Austin, Texas

State, Texas A & M, and St. Edwards, and our enrollment is also high and in full capacity of our resources.

[h] Direct and indirect program-related revenues and costs to the College

Identify the major sources of revenue for the program, including grants, partnerships, etc.

The Chemistry Department receives no direct grants. Revenue sources are from tuition, taxes and State reimbursement. The Department currently is a partner with the ACC Science Departments and has received a grant to establish a Mathematics/Science Teacher Certification Program.

Compare program costs to those of other ACC programs.

See tables H1 and H2

Compare the program's actual expenditures to the approved program budget for the previous two years.

The Chemistry Department has stayed within it's budget for the last two years.

TRANSFER or WORKFORCE AREA-SPECIFIC INFORMATION

Only Workforce Programs complete the following section.

Report/status from latest external accrediting agency visit

N/A

When was the most recent program revision?

N/A

Number of declared majors intending to complete a program who complete degree/certificate requirements within 6 years

N/A

Average number of semesters it takes for students to gain degree/credential.

N/A

Number of graduates within the last three years

N/A

Demographics of graduates

N/A

Percent of graduates who are employed within one year of graduation.

N/A

What evidence exists that program completers (or near completers) are successful on the job? What, if available, are their beginning salaries?

N/A

Percent of employers indicating satisfaction with graduates.

N/A

Discuss the most recent results of Focus Group or internal survey of employers.

N/A

Number of employers indicating need for more graduates

N/A

Provide evidence of SCANS competency integration into course syllabi and programs.

N/A

How often does the program's advisory committee meet to discuss curriculum issues?

N/A

When and where are advisory committee minutes maintained and posted?

N/A

Evidence of recent review of curriculum by external advisory committee.

N/A

Advisory committee validation of entry level skills

N/A

Only Transfer Programs complete the following section.

Number and percent of graduates who transfer within one year of graduation.

Only 2 students graduated from Chemistry in 2000-2001. Both students transferred to higher education. (Source: Texas Higher Education Coordinating Board). However, most students take chemistry courses to meet their requirements for graduation in other disciplines at ACC or transfer to four-year institutions.

Number of articulation agreements with universities and colleges

The following link is a listing of the course equivalencies between Austin Community College and most Texas Public Universities.

<http://www2.austin.cc.tx.us/transfer/equiv/equiv.htm>

Courses that transfer.

CHEM 1411
CHEM 1412
CHEM 2423
CHEM 2425

Number of courses that transfer

4

Number of student complaints about problems with course transfer

Zero.

Discuss the results of the most recent Survey/focus group of transfer institutions.

No such information is available.

Discuss data from transfer institutions if available.

No such data is available.

Number of students transferring successfully.

No such data is available.

CONCLUSIONS

Based on the information collected and analyzed during the program review process, what are the major conclusions of this review of the program? Summarize them here and complete the *Program Status* form.

The chemistry program is based on sound curriculum and course objectives, with high quality instruction to meet the needs of students and community. Many of the students who take chemistry courses either complete an associate degree from ACC or transfer to four-year institutions to further their academic goals that benefit individual students as well the local community and economy. Multiple sections of all courses are offered at each campus location at various hours of days and evenings in order to make it convenient to students and easily accessible to the entire community, thus minimizing the hardship of time conflicts and unnecessary distance barriers. The faculty are highly qualified and dedicated to their job. The curriculum and course objectives are reviewed periodically and kept current. The faculty and staff engage themselves in professional development activities on a regular basis to keep them up to date and proficient in their job functions. The department maintains academic standards and integrity by using common course syllabus and course objectives, with academic freedom and flexibility given to each faculty for student assessment via tests, quizzes and final exams. The department also employs very objective evaluations for all faculty and staff annually, and makes recommendations for performance improvement for its employees, when needed. The available resources are utilized efficiently, with some faculty taking more advantage of the available technology than others. The chemistry program is very competitive with regard to performance, costs to students, and enrollment with other state and private institutions in Texas. However, as part of the continuous improvement and expansion of the chemistry programs, the department needs to focus on many key issues and areas of weaknesses that need considerable attention, planning and resource allocation for the coming years, which are identified and presented under "Recommendations" below.

PROGRAM VISION STATEMENT

State the program's vision or preferred future for the next five years. The vision statement should provide direction to the program as it makes improvements to enhance its effectiveness and efficiency.

The chemistry department envisions considerable growth and expansion of its program and further improvement of its quality over the next five years. As part of the growth, the department plans to offer more service courses to meet the needs of other disciplines at ACC. There is a demonstrated and pressing need for a chemistry course designed to meet the specific needs of students in Allied Health Science programs, and chemistry department has been directly

approached by the biology department to offer that course. The chemistry department is currently processing this issue through the departmental faculty, and expecting to develop a course that would serve this purpose. Moreover, the program is planning to offer several sections of one or more courses at the proposed South campus starting in Fall/2005. These two projects, combined with the recommendations to expand course offerings at PIN and CYP campuses, especially for organic chemistry courses, are projected for considerable growth and expansion of the chemistry program that would serve the needs and interests of students and community. The program also has vision for planning to offer Distance Learning/Hybrid chemistry courses in the near future.

The department also plans to acquire modern chemical instruments over the next three years, to modernize and upgrade its laboratory instruction. This project will help improve the quality of instruction for upper level chemistry courses, especially for organic chemistry, and provide our students with more sophisticated lab experience to position them well with those coming from the competing institutions like UT, Texas State and St. Edward's.

The department also plans to hire at least three new full-time faculty during the next three years, in order to improve the curriculum and quality of instruction, and to relieve the over-burdened full-time faculty to some extent.

Addition of one or two full-time lab assistants are also planned, which will improve the lab instruction and safety.

The department also expects to improve the rate of student retention, program completion, and mastery level through a number of measures, such as introducing a placement test for all students desiring to enroll in General Chemistry I course, and by establishing a standardized student assessment method for all courses.

The department also envisions to improve upon its cooperation, liaison and articulation agreements with other local institutions, such as UT, Texas State, Texas A & M and St. Edward's, especially for the Teacher Education program.

The department also plans to improve its budget efficiency by giving faculty and Lab Coordinators at each campus more control and oversight over the budget, especially more supervision by the Lab Coordinators for all spendings by the Lab Assistants.

The department plans to improve communication, cooperation and teamwork among all faculty and staff through collegial efforts and strengthening its mentoring program for adjunct and new Full-time faculty.

The chemistry program also plans to improve further its safety policies and practices, especially in labs.

RECOMMENDATIONS

What does the self-study team recommend for improving or maintaining the quality of the program? Summarize them here and complete the *Quality Improvement Plan* form.

- Purchase new and modern lab equipment.
- Develop and offer one or two chemistry courses specifically designed for students in allied health science programs.
- Build lecture and lab instructional facilities for the proposed Southeast Campus.
- Expand program to offer more courses in all campuses, especially Organic Chemistry at PIN and CYP.
- Hire more full-time faculty and lab assistants.
- Improve student retention and course completion rates.
- Improve communication and coordination among faculty, staff and campuses.
- Plan to develop and offer chemistry courses in Distance Learning/Hybrid programs.
- Improve Lab Safety.
- Improve liasion and cooperation with other institutions.
- Ipmrove budget efficiency and use of available resources by giving faculty and Lab Coordinators more control over spendings by Lab Assistants.

ADDITIONAL COMMENTS



APPENDIX

List all documents that you used in your report:

OIE Tables 1-9 from Supplemental Data
ACC Fact Book 1999-2002
Fall 2001 Analysis of Non Transfer and Withdrawal and Non Mastery Rates (OIE)
FY 2002 Program Revenues vs Expense Report
Faculty Diversity Report. Ziv Shafir OIE
Budget Planning Book
Texas Higher Education Coordinating Board

When you have completed this report, send it via e-mail to the Coordinator for Institutional Assessment (rwall@austincc.edu) as an attachment.

Table C1

Uncombined Chemistry Offerings by Campus Summer 2002-Spring 2003

	CYP	EVC	NRG	PIN	RGC	RVS	Totals
Chem 1405	5	3	11	6	4	14	43
Chem 1411	7	0	31	5	29	17	89
Chem 1412	3	0	10	2	14	8	37
Chem 2423	0	0	6	0	6	3	15
Chem 2425	0	0	2	0	6	2	10

Table source: OIE, Supplemental Information

Table C2

Uncombined Sections by time of day Summer 2002-Spring 2003

	Morning	Afternoon	Evening	Week-end	Totals
Chem 1405	20	15	8	0	43
Chem 1411	44	27	15	3	89
Chem 1412	17	10	10	0	37
Chem 2423	7	4	4	0	15
Chem 2425	4	2	4	0	10

Table source: OIE, Supplemental Information

Table: C3

Number of Enrollments by Campus.

N.B 2002-2003 figures do not include Summer

	Course	1999-2000	2000-2001	2001-2002	2002-2003	Total
CYP	CHEM-1405	93	72	94	76	335
	CHEM-1411	108	114	133	109	464
	CHEM-1412	51	36	49	39	175
	Total	252	222	276	224	974
EVC	CHEM-1405	22	34	36	36	135

	Total	22	34	36	36	128
NRG	CHEM-1405	186	180	183	148	697
	CHEM-1411	410	437	494	425	1766
	CHEM-1412	137	133	138	134	542
	CHEM-2423	60	66	69	60	255
	CHEM-2425	43	28	28	29	128
	Total	836	844	912	796	3388
PIN	CHEM-1405	23	77	97	82	279
	CHEM-1411	26	109	81	70	286
	CHEM-1412	0	47	35	17	99
	Total	49	233	213	169	664
RGC	CHEM-1405	129	83	82	60	354
	CHEM-1411	439	414	443	338	1634
	CHEM-1412	195	182	188	151	716
	CHEM-2423	86	81	93	48	308
	CHEM-2425	80	69	67	56	272
	Total	929	829	873	653	3284
RVS	CHEM-1404	213	207	201	255	876
	CHEM-1411	317	320	311	298	1246
	CHEM-1412	197	204	205	129	735
	CHEM-2423	38	47	52	47	184
	CHEM-	29	33	30	17	109

	2425					
	Total	794	811	799	746	3150
TOTALS		2882	2973	3109	2624	11588

Table C4
Cancelled Sections by Campus Fall 1999-Summer 2002

	CYP	EVC	NRG	PIN	RGC	RVS
Chem 1405	0	4	1	2	2	4
Chem 1411	0	0	1	1		1
Chem 1412	1	0	1	1		2
Chem 2423	0	0	1	0	2	1
Chem 2425	0	0	1	0	3	2

Table source OIE, Supplemental Information

Table C5
Closed/Full Sections by Campus Fall 1999-Spring 2003

	CYP	EVC	NRG	PIN	RGC	RVS	Totals
Chem 1405	4	1	8	2	4	6	25
Chem 1411	3	0	22	3	22	16	66
Chem 1412	1	0	6	0	13	8	28
Chem 1423	0	0	4	0	0	0	4
Chem 1425	0	0	3	0	4	1	8

Table source: OIE, Supplemental Information

Table C6
Ethnicity by Term

	White	Black	Hispanic	Asian American	American Indian	Non Res Alien	Other	Totals
Fall 1999	722	54	225	126	7	29	9	1172
Spring 2000	684	55	221	119	9	43	6	1137
Summer 2000	366	3	103	60	3	5	6	573
Fall 2000	727	50	221	134	10	45	22	1209
Spring 2001	658	51	236	139	12	45	22	1163
Summer 2001	381	28	86	67	4	25	10	601
Fall 2001	729	51	245	147	6	53	20	1251
Spring 2002	686	55	203	135	12	77	22	1190
Summer 2002	362	43	127	87	5	35	9	668
Fall 2002	775	67	247	123	20	63	22	1317
Spring 2003	778	60	250	116	20	63	20	1307

Table source: OIE, supplemental Information

Table C7
Age and Gender of Students

	Mean Age	Female	Male	Total
Fall 1999	23.2	579	593	1172
Spring 2000	23.4	565	572	1137
Summer2000	23.1	346	227	573
Fall 2000	23.0	608	601	1209
Spring 2001	23.1	625	538	1163
Summer2001	23.0	337	264	601
Fall 2001	22.8	602	649	1251
Spring 2002	23.2	588	602	1190
Summer2002	23.4	381	287	668
Fall 2002	23.2	708	609	1317
Spring 2003	23.7	723	584	1307

Table source OIE, Supplemental information

Student Outcomes

1) Course Completion Rates: College Average for Non-Mastery 31.2% (Fall 2001)
Chemistry 38.2% (Fall 2001)

Table D1
CHEM 1405

TERM	A %	B %	C %	D %	F %	W %	Other %	Mastery Rate
Fall1999	17	24	15	5	11	28	0	56%
Spring 2000	26	18	16	5	11	24	0	60%
Fall 2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring 2001	23	24	13	2	11	28	0	60%
Fall 2001	20	22	20	4	11	23	0	62%
Spring 2002	24	21	15	7	10	23	0	60%
Fall 2002	22	20	14	4	9	31	0	56%
Spring 2003	24	24	15	6	6	24	1	63%

Table D2
CHEM 1411

TERM	A %	B %	C %	D %	F %	W %	Other %	Mastery%
Fall1999	22	22	9	4	6	32	5	53%
Spring 2000	24	21	12	2	8	33	0	57%
Fall 2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring 2001	27	16	13	5	8	32	0	56%
Fall 2001	24	21	14	3	7	32	0	59%
Spring 2002	26	19	11	4	7	33	0	56%
Fall 2002	22	21	15	4	9	29	0	58%
Spring 2003	23	19	13	5	10	28	1	55%

Table D3
CHEM 1412

TERM	A %	B%	C %	D %	F %	W %	Other %	Mastery %
Fall1999	34	21	7	3	3	25	7	62%
Spring 2000	38%	20%	9%	2%	4%	27%	0%	67%
Fall 2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring 2001	32	25	10	3	4	25	0	67%
Fall 2001	33	16	13	2	6	31	0	62%
Spring 2002	33	21	12	3	6	25	0	66%
Fall 2002	45	16	11	3	4	22	0	72%
Spring 2003	30	23	13	4	5	23	2	66%

**Table D4
CHEM 2423**

TERM	A %	B %	C %	D %	F %	W %	Other %	Mastery%
Fall1999	31	29	12	1	2	24	0	72
Spring 2000	14	24	22	9	9	22	0	60
Fall 2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring 2001	26	29	18	0	8	18	0	74
Fall 2001	29	37	9	2	7	16	0	75
Spring 2002	19	29	18	3	10	21	0	66
Fall 2002	39	37	5	2	5	12	0	80
Spring 2003	34	16	20	5	4	20	0	70

**Table D5
CHEM 2425**

TERM	A %	B %	C %	D %	F %	W %	Other %	Mastery%
Fall1999	40	14	9	2	12	23	0	63
Spring 2000	25	16	14	2	5	39	0	54
Fall 2000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Spring 2001	43	28	17	3	3	5	0	88
Fall 2001	29	23	20	9	3	17	0	71
Spring 2002	40	27	17	0	6	10	0	83
Fall 2002	35	21	12	0	12	21	0	67
Spring 2003	39	32	10	3	3	10	2	81

Table source D1-D5: ACC Grade distribution reports

Table D6
Withdrawal Rates

	Fall 1997	Fall 2001
Chemistry	38%	28.2%
Physics	37.4%	31.4%
Biology	31.3%	27.7%
Math	29.3%	34.3%
College Average	20.5%	22.5%

Table E1
Faculty Diversity

Employee Type	Ethnicity	Female Count	Row %	Male Count	Row %	Total Count
Adjunct Faculty	White	5	62.5	3	37.5	8
	Black, Non-Hispanic			2	100.0	2
	Asian/Pacific Island			4	100.0	4
	Group Total	5	35.7	9	64.3	14
Full-Time Faculty	White	2	40.0	3	60.0	5
	Black, Non-Hispanic			2	100.0	2
	Asian/Pacific Island	1	33.3	2	66.7	3
	Group Total	3	30.0	7	70.0	10
Other	White	2	50.0	2	50.0	4
	Hispanic			1	100.0	1
	Group Total	2	40.0	3	60.0	5

Table source: Ziv Shafir, OIE

Table E2
Percentage of sections taught by full time faculty.

	FY 1998	FY 1999	FY2000	FY2001	FY2002
Chemistry	27%	35%	49%	65%	64%
Dean Area	22%	24%	20%	26%	35%

Table source: OIE, Budget Planning Book 2004

Table E3

Contact hours taught by fulltime faculty.

	FY 1998	FY 1999	FY2000	FY2001	FY2002
Chemistry	28%	36%	51%	66%	67%
Dean Area	33%	33%	37%	42%	43%

Table source: OIE, Budget Planning Book 2004

Table F1

Ratio of Full Time Faculty to Adjunct by course and program

Course	Fall 2003			Spr 04		
	Section #	% FT	Ratio FT:Adj	Section #	% FT	Ratio FT:Adj
1405 lec	18	67%	2:1	19	58%	1:1
1405 lab	18	11%	1:8	19	26%	1:3
1411 lec	36	64%	2:1	40	72%	1:3
1411 lab	36	33%	1:2	40	38%	1:1
1412 lec	15	87%	7:1	13	85%	6:1
1412 lab	15	40%	1:1.5	13	39%	1:1
2423 lec	5	60%	1.5:1	6	100%	All
2423 lab	5	40%	1:1.5	6	67%	2:1
2425 lec	4	50%	1:1	2	50%	1:1
2425 lab	4	0%	None	2	0%	None

Table source: ACC schedule web page <http://www3.austincc.edu/schedule/>

Table H1
Chemistry Department Budget (Major Items).

Expenditure	FY 2002	FY 2003	FY 2004
F-T Faculty Salary	610,409	625,056	667,083
Adj Faculty Salary	268,057	339,863	364,673
Faculty Overloads	30,000	79,568	85,376
Classified Salary	202,144,	204,028	212,079
Hourly Salary	31,823	30,232	30,232
Consumable Supply	34,558	32,830	37,330
Operating Supply	4,701	4,466	4,466
Equipment		17,931	5,931

Table source: Business Services, Budget

Table H2
Program costs for FY 2002 Math/Science Comparison.

Department	State Funding	Tuition Revenue	Total Revenue	Expenses	% Marginal Surplus
CHEM	1,051,397	608,838	1,709,822	1,348,442	21.1
BIOLOGY	1,857,131	1,269,299	3,126,430	2,385,417	23.7
PHYSICS/ASTRONOMY	848,725	42,986	1,420,001	941,907	33.7
MATH	4,741,712	3,969,342	8,711,055	4,648,216	46.6

Table source: Business Services, Revenues vs. Expenses

Quality Improvement Plan Form for **Chemistry** Program

To be useful, a plan must be based on distinct, measurable tasks or actions that strengthen the program. An action plan is not philosophical or abstract. It can and should include some “what ifs.” “If this equipment is purchased,” “If space is added,” or “If schedules are changed,” are examples.

The template below is intended to assist you in thinking and planning long-term. The College knows that factors can and do change so that some of these projected tasks may not occur—especially those projected for the third year. Furthermore, we know that this plan will need to be revised. Therefore, in one year, OIE will be asking you to update both your progress towards these tasks and to review/revise your tasks for the second and third year of the plan.

Note on Requests for Funds : Consider changes that require **one-time** costs (equipment, renovation, etc.) and changes that require **recurring** costs (typically new positions). *All requests for funding should indicate how they will improve learning and meet targeted objectives.*

2004-05

Goal: Develop a chemistry course specifically designed to meet the needs of Allied Health Science Programs.

Estimated completion date: October 31, 2004

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Develop curriculum and course objectives, design instructional methods, prepare course syllabus, select a textbook and a laboratory manual, purchase required equipment, supplies and chemicals, set up labs, catalog the course.	The outcome is a chemistry course ready to be offered at several campuses, with one section in each, which is specifically designed to meet the needs of the Allied Health Science Programs, and the measure of its success is to be determined by its demands from students.	Equipment: \$25,000 (one-time). Supplies: \$ 4,000 per year (recurring). The above funds will be evenly divided among the NRG, RVS, RGC, PIN and CYP campuses to purchase basic equipment, chemicals and supplies for the course to be offered starting Fall/2005.	If the development and offering of this course is not funded, students in the Allied Health Science programs will continue to suffer in their efforts to complete their academic programs smoothly and successfully, because of lack of appropriate chemistry backgrounds needed in their programs.	Chemistry Department is responsible for planning, developing, offering and staffing of the course. The College administration is responsible for funding the course.

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Goal: Hire one full-time chemistry faculty for RGC to fill the created vacancy.

Estimated completion date: Hiring process to be completed August 10, 2004; position is continuing.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Place job advertisement, collect and screen applications, interview selected candidates, make recommendations for hiring and job offer, hire the best candidate.	The outcome is the final hiring of the most qualified and best available candidate for a full-time faculty position before the start of Fall/2004 to fill the vacancy created at RGC by the death of one full-time faculty. Measure of success will be determined by the annual performance evaluation of the hired faculty and the improvement of the chemistry program.	Salary: \$45,000 -recurring per year. Benefits: \$5,000 -recurring per year. Retirement: \$2,750 - recurring per year. Start-up: \$5,000 (One-time) for furniture, computers, etc.	If this position is not funded, the chemistry department will be severely under-staffed with un-managable burden on the other members of the full-time faculty, the quality of the program will suffer badly, and the proposed expansion of services through offering of more chemistry courses for better community accessibility will be hampered.	Chemistry Department is to define job description, screen applications, interview candidates, make hiring recommendations; Human Resource to coordinate advertisement, interview process and final hiring decision; College administration is responsible for funding.

Goal: Modernize and upgrade chemistry lab facilities.

Estimated completion date: The system should be in place for Fall/2004.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Buy modern chemical instruments, such as three FT-IR Spectrometers, one each for NRG, RVS and RGC	Outcome: existing chemistry lab instruction will be significantly upgraded, with possible additions of new lab activities and students having first-hand experience with modern chemical instruments.	\$10,000 per unit Total for 3: \$30,000 (one-time) This addition of equipment will improve the quality of chemistry lab instruction for all chemistry courses.	If this project is not funded, the chemistry lab experience, specifically for students in organic chemistry, will continue to be below the college standard, and ACC students will not be competitive with those	Chemistry Department is responsible for selection of equipment and training of Faculty and Lab Assistants on the newly acquired instruments; College administration is responsible for funding and actual purchase of

	Measure of Success: Success will be measured in terms of ACC chemistry students being more competitive with those coming from other institutions with respective to jobs and admission to higher academic programs.		from other institutions.	equipment.
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Goal: Improve student retention and successful completion rates

Estimated completion date: The system should be in place for Fall/2004 enrollment, and then to continue each semester.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Introduce an Entrance Exam for all students planning to enroll in General Chemistry I (CHEM 1411) course; develop a multiple-choice test to be administered in the Testing Centers at each campus and prepare a scantron answer key; determine the minimum score in Entrance Exam to allow students to enroll in CHEM 1411; students below that minimum score will be required to enroll in Introduction to Chemistry (CHEM 1405) first.	Students who have adequate preparations for the college level General Chemistry course will be enrolled in General Chemistry I course, with the expected outcome of better retention and completion rates. Measure of success will be determined by comparing student retention and completion rates with those of the past.	The cost in terms of dollars should not be significant, but it will involve quite a bit of valuable faculty time to develop the test and answer key.	There is not not much funding issue, but if this project is not adopted, unprepared and under-prepared students will continue to enroll in General Chemistry I course, with the result being a continuing low retention and completion rates.	Chemistry Department is responsible for developing the test, answer key, and the passing score; Student Services and/or Testing Centers are responsible for administration of the tests, grading and submitting the test scores to Student Counselling/Advising Offices; Student Counselling/Advising Offices are responsible for student placements in CHEM 1411 or CHEM 1405; Registrar's Offices are to ensure that students are appropriately enrolled, and OIE to track students for comparison.

2005-06

Goal: Offer a chemistry course for Allied Health Science programs.

Estimated completion date: The system should be in place for Fall/2005, then Continuing every semester.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Schedule one section of chemistry for Allied Health Science students , with 3.0 LEH for lecture and 2.25 LEH for lab, at each of NRG, RVS, RGC, PIN and CYP campuses for both Fall and Spring Semesters; assign instructional responsibility to qualified faculty.	An outcome will be the availability of one chemistry course specifically designed to meet the needs of students in Allied Health Science programs and its success would be measured by the demand of the course and student performance in their programs.	Salary: \$55,126 -recurring per year. Supplies: \$4,000 -recurring per year. The salary is based on the adjunct faculty rate of \$1025 per LEH, that accounts for \$5,381.25 for the one section of lecture and lab, multiplied by 5 for a total of \$26,906.25 for all five sections/semester, multiplied by 2 for a grand total of \$53,812.5 for a year. The supplies monies are evenly divided among the five campuses, with \$800 each, per year.	If the offering of this course is not funded, students in the Allied Health Science programs will continue to suffer in their efforts to complete their academic programs smoothly and successfully, because of lack of appropriate chemistry backgrounds needed in their programs.	The Chemistry Department is responsible for scheduling and assigning instructional responsibility, and the College administration is responsible for funding.

Goal: Add one position to the full-time chemistry faculty.

Estimated completion date: Hiring process is to be completed by August 10, 2005, Position is Continuing.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Place job advertisement, collect and screen	The outcome is the final hiring of the most qualified	Salary: \$45,000 -recurring per year.	If the position is not funded, the proposed	Chemistry Department is to define job description,

applications, interview selected candidates, make recommendations for hiring and job offer, hire the best candidate.	and best available candidate for a full-time faculty position before the start of Fall/2005 and improvement of quality of the Chemistry program through the proposed expansion of services. Measure of success will be determined by the annual performance evaluation of the hired faculty and the improvement of the chemistry program.	Benefits: \$5,000 -recurring per year. Retirement: \$2,750 - recurring per year. Start-up: \$5,000 (One-time) for furniture, computers, etc.	expansion of services to offer chemistry to Allied Health Science programs and the proposed start of chemistry courses at the South campus will be affected adversely, program quality will suffer, and accessibility to chemistry courses by community will not be improved.	screen applications, interview candidates, make hiring recommendations; Human Resource to coordinate advertisement, interview process and final hiring decision; College administration is responsible for funding.
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Goal: Modernize and upgrade chemistry lab facilities.

Estimated completion date: The system should be in place for Fall/2005.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Buy modern chemical equipment, such as three GC/MS instruments, one each for NRG, RVS and RGC	Outcome: existing chemistry lab instruction will be significantly upgraded, with possible additions of new lab activities and students having first-hand experience with modern chemical instruments. Measure of Success: Success will be measured in terms of ACC chemistry students being more competitive with those coming from other institutions with respective to jobs and admission to	\$15,000 per unit Total for 3: \$45,000 (one-time) This addition of equipment will improve the quality of chemistry lab instruction for all chemistry courses.	If this project is not funded, the chemistry lab experience, specifically for students in organic chemistry, will continue to be below the college standard, and ACC students will not be competitive with those from other institutions.	Chemistry Department is responsible for selection of equipment and training of Faculty and Lab Assistants on the newly acquired instruments; College administration is responsible for funding and actual purchase of equipment.

	higher academic programs.			
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Goal: Offer Two sections of Introductory Chemistry (CHEM 1405) course at South campus.

Estimated completion date: The system should be in place for course offering in Fall/2005, then continuing.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Buy appropriate equipment, supplies and chemicals, set up labs, and get ready for two sections of CHEM 1405 for Fall/2005 and two sections for Spring/2006.	The expected outcomes are the availability of a chemistry course at South campus, expansion of services to the community, and improvement of accessibility by students and residents living in this part of the city. The success is to be measured by students' demand for the course and their satisfaction of the instructional quality and accessibility.	Equipment: \$25,000; one-time. Supplies: \$3,000; recurring per year. Faculty Salary: \$21,525; recurring. The salary is based on the adjunct faculty rate of \$1025 per LEH, that accounts for \$5,381.25 for 5.25 LEH for one section of lecture and lab, multiplied by 4 for a total of \$21,525 for all four sections/per year.	If the project is not funded, the chemistry course in a high demand locality will not be available, that will cause community dissatisfaction about ACC.	The Chemistry Department is responsible for planning, setting the labs, scheduling of the classes, and instructional assignment. The College administration is responsible for funding.

2006-07

Goal: Offer Organic Chemistry course at PIN campus.

Estimated completion date: Project to be completed by mid-August, 2006, course offered in Fall/2006, then continue

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Remodel lab facilities, buy appropriate equipment, supplies and chemicals, set up labs, and	The outcome is the availability of a section of organic chemistry course at PIN for expansion of the	Lab Remodelling: \$25,000 (one-time). Equipment: \$40,000 (one-time).	If the project is not funded, organic chemistry course will be not available in this locality, resulting in poor	The Chemistry Department is responsible for planning, setting the labs, scheduling of the

get ready for one section of CHEM 2423 for Fall/2006 and one section of CHEM 2425 for Spring/2007.	program, and for better accessibility by the community. The success is to be measured by students demand and satisfaction for the course, and quality of instruction.	Supplies: \$3,000 - recurring per year. Faculty salary: \$10,762.50 The salary is based on the adjunct faculty rate of \$1025 per LEH, that accounts for \$5,381.25 for 5.25 LEH for one section of lecture and lab, multiplied by 2 for a total of \$10,762.50 for two sections/per year.	accessibility and community dissatisfaction about ACC.	classes, and instructional assignment. The College administration is responsible for funding.
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Goal: Offer Organic Chemistry course at CYP campus.

Estimated completion date: Project to be completed by mid-August, 2006, course offered in Fall/2006, then continue

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Remodel lab facilities, buy appropriate equipment, supplies and chemicals, set up labs, and get ready for one section of CHEM 2423 for Fall/2006 and one section of CHEM 2425 for Spring/2007.	The outcome is the availability of a section of organic chemistry course at CYP for expansion of the program, and for better accessibility by the community. The success is to be measured by students demand and satisfaction for the course, and quality of instruction.	Lab Remodelling:\$25,000 (one-time). Equipment: \$40,000 (one-time). Supplies: \$3,000 - recurring per year. Faculty salary: \$10,762.50 recurring per year. The salary is based on the adjunct faculty rate of \$1025 per LEH, that accounts for \$5,381.25 for 5.25 LEH for one section of lecture and lab, multiplied by 2 for a total of \$10,762.50 for two sections/per year.	If the project is not funded, organic chemistry course will be not available in this locality, resulting in poor accessibility and community dissatisfaction about ACC.	The Chemistry Department is responsible for planning, setting the labs, scheduling of the classes, and instructional assignment. The College administration is responsible for funding.

Goal: Add one position to the full-time chemistry faculty.

Estimated completion date: Hiring process is to be completed by August 10, 2005, Position is Contituing.

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
Place job advertisement, collect and screen applications, interview selected candidates, make recommendations for hiring and job offer, hire the best candidate.	The outcome is the final hiring of the most qualified and best available candidate for a full-time faculty position before the start of Fall/2006 and improvement of quality of the Chemistry program through the proposed expansion of services to South campus and Allied Health Science programs. Measure of success will be determined by the annual performance evaluation of the hired faculty, the improvement of the chemistry program and communbity satisfaction.	Salary: \$45,000 - recurring per year. Benefits: \$5,000 -recurring per year. Retirement: \$2,750 - recurring per year. Start-up: \$5,000 (One-time) for furniture, computers, etc.	If the position is not funded, the proposed expansion of services to offer chemistry courses to Allied Health Science programs and at South campus will be left without full-time faculty oversight, the Eastview campus and South campus will continue to be without the presence of a full-time faculty there, and the proposed addition of organic chemistry courses at PIN and CYP campuses may suffer, making the program quality and accessibility deteroriate.	Chemistry Department is to define job description, screen applications, interview candidates, make hiring recommendations; Human Resource to coordinate advertisement, interview process and final hiring decision; College administration is responsible for funding.

Goal: Finish up all of the unfinished projects that are listed above.

Estimated completion date:To be completed before the clases start in Fall/2007

Task or Action	Expected Outcome/ Measure of Success	Estimated Cost(s) with Justification	Consequence if Not Funded	Who is Responsible
As defined above.	As stated above.	As stated, with adjustments for delay.	As stated above, plus more resentment from the community, with possibility of a riot(?).	As sated above, but the College administration is finally responsible for anything that is not finished as planned above.