Program Review Executive Summary

Institution Name: Rose State College
Program Name and State Regents Code: Chemistry (0052)
List Any Options:
Date of Review: October 2017 **Recommended Date of Next Review:** 2027

Centrality to Institutional Mission: The Chemistry Program provides students with access to quality instruction by well qualified faculty so that they can complete their associate degree and/or transfer to a four year program with the best possible chance for success.

Program Objectives and Goals:
The Associate in Science in Chemistry Degree Program provides students with the analytical skills and scientific knowledge to expand and apply critical thinking to all facets of learning. The expected Program outcome is to provide a comprehensive lower-division education for students who plan to transfer to a baccalaureate degree program.

Upon completion, graduates will be prepared to:

- Apply analytical thinking skills to approach problems with scientific thought;
- Utilize acquired skills in laboratory practice and safety;
- Write and articulate the key concepts taught within the chemistry curriculum;
- Apply acquired skills to other disciplines;
- Interpret topical issues with an acute ability to understand scientific aspects; and
- Transfer to baccalaureate programs in sciences or engineering with the knowledge base, problem solving skills, and laboratory skills commensurate with the traditional first two years of college chemistry to provide them with the best possibility of success.

Quality Indicators Such As:	
– **Student Learning Outcomes** – **Effective Teaching** – **Effective Learning Environments** – **External Curricular Evaluation** – **Capacity to Meet Needs and Expectations of Constituencies**	• Students are consistently evaluated in effective communication and quantitative reasoning • Average course size is 24 students. • Classrooms and laboratories are modern and well equipped. • Students have access to tutoring and help sessions • Course equivalencies are regularly confirmed for transfer to other institutions. (Via participation in the Course Equivalency Project of the Oklahoma Regents for Higher Education.) •

Productivity for Most Recent 5 Years	**Number of Degrees:** 2017: 0, 2016: 4, 2015: 0, 2014: 1, 2013: 2, Total: 7 **Number of Majors:** 2017: 16, 2016: 24, 2015: 17, 2014: 18, 2013: 13, Total: 88
Other Quantitative Measures Such As: – **Number of Courses for Major** – **Student Credit Hour in Major** – **Direct Instructional Costs** – **Supporting Credit Hour Production** – **Roster of faculty members including the number of FTE faculty in the specialized courses within the curriculum** – **If available, information about employment or advanced studies of graduates of the program over the past five years** – **If available, information about the success of students from this program who have transferred to another institution**	• During the current evaluation period: o Five chemistry courses are taught regularly. o There were 10138 credit hours taught in 2017. o Chemistry course enrollment is up 15.2% since 2012. o Of 64 students that transferred to another institution, 17 (27%) went on to achieve a degree. • Faculty Roster: o Dawcett Middleton, MS, Professor o Andrew Slagle, PhD, Professor o Matthew Czapla, PhD, Professor o Emily McKee, MS, Professor o Adjunct Faculty, MS & PhD
Duplication and Demand	• No other programs in the Midwest City/ Del City area offer college level chemistry courses. • Due to recent changes to the RSC nursing program our enrollment has significantly increased.
Effective Use of Resources	• Increased enrollment and credit hour without significant increase in expenditures or full time faculty.

Strengths and Weaknesses	***Strengths:*** • Dedicated and well qualified full time faculty. • Excellent faculty in supporting fields of math, physics and life sciences. • Preparedness of students transferred to other institutions. • Transfer agreements with colleges and universities throughout the state. • Excellent support staff in the lab and department office. • Excellent support from the department dean and upper administration. ***Weaknesses:*** • Difficulty finding qualified adjunct faculty. • Full time faculty required to teach over 25% above contract time because of high enrollment and limited number of faculty.
Recommendations	• Increase the number of full time faculty from 4 to 5.

Program Review Summary
Chemistry (0152)

Based on the thorough internal or external program review addressing all criteria in policy, a comprehensive report should be possible within ten or fewer pages. This program review template is provided to assist institutions in compiling the program review information, which is to be presented to the institutional governing board prior to submission to the State Regents. Executive Summaries should be possible within two pages using the provided template (Program Review Executive Summary Template).

Description of the program's connection to the institutional mission and goals:

The Chemistry Department has the goal of providing comprehensive lower division courses and degrees that are compatible with (transferable) to degree programs at 4-year colleges and universities. Course handouts by all faculties provide students with the necessary information to be successful in the courses. Courses are designed to support existing degree programs within Rose State College and also provide strong coverage of material required for students taking exams, such as the MCAT, PCAT and DAT, for entrance into medical professional programs. Our courses are maintained at levels commensurate with 4-year schools.

3.7.5 Process (Internal/External Review):
Previous Reviews and Actions from those reviews:

Analysis and Assessment (including quantitative and qualitative measures) noting key findings from internal or external reviews and including developments since the last review:

The faculty develops, routinely reviews, and updates curriculum for the chemistry courses. Every full time chemistry faculty adheres to strict assessment (testing) and laboratory standards to assure the students are learning course material at a level commensurate with other institutions of higher learning.

A. Centrality of the Program to the Institution's Mission:

The Chemistry Program provides students with access to quality instruction by well qualified faculty so that they can complete their associate degree and/or transfer to a four year program with the best possible chance for success.

B. Vitality of the Program:

B.1.Program Objectives and Goals:

The Associate in Science in Chemistry Degree Program provides students with the analytical skills and scientific knowledge to expand and apply critical thinking to all facets of learning. The expected Program outcome is to provide a comprehensive lower-division education for students who plant to transfer to a baccalaureate degree program.

B.2 Quality Indicators (including Higher Learning Commission issues):

- Students are consistently evaluated in effective communication and quantitative reasoning
- Average course size is 24 students.
- Classrooms and Laboratories are modern and well equipped.
- Students have access to tutoring and help sessions
- Course equivalencies are regularly confirmed for transfer to other institutions. (Via participation in the Course Equivalency Project of the Oklahoma Regents for Higher Education.)

B.3. Minimum Productivity Indicators:

Time Frame (e.g.: 5 year span)	Head Count (majors)	Graduates (A.S.)
2013	13	2
2014	18	1
2015	17	0
2016	24	4
2017	16	0

B.4. Other Quantitative Measures:

a. Number of courses taught exclusively for the major program for each of the last five years and the size of classes:

None of our chemistry courses is taught exclusively for chemistry majors. The chemistry program directly supports two other programs in our division (Pre-Pharmacy and Pre-Professional Health, Pre-Engineering and Allied Health) which require all of the same chemistry courses as our chemistry major.

b. Student credit hours by level generated in all major courses that make up the degree program for five years:

Number of Courses Taught		Number of Enrollments		Number of Credit Hrs	
2013	108	2013	2119	2013	9398
2014	111	2014	2063	2014	9125
2015	113	2015	2005	2015	8819
2016	114	2016	2195	2016	9667
2017	117	2017	2312	2017	10138

c. Direct instructional costs for the program for the review period:

Travel	0
Equipment	$1,000
Supplies	$5,000
Full-Time Faculty	$260,000
Adjunct Faculty	$68,645
Total	$334,645

d. The number of credits and credit hours generated in the program that support the general education component and other major programs including certificates:

Number of Courses Taught		Number of Enrollments		Number of Credit Hrs	
2013	108	2013	2119	2013	9398
2014	111	2014	2063	2014	9125
2015	113	2015	2005	2015	8819
2016	114	2016	2195	2016	9667
2017	117	2017	2312	2017	10138

e. A roster of faculty members, faculty credentials and faculty credential institution(s). Also include the number of full time equivalent faculty in the specialized courses within the curriculum:

Faculty	Credential	Institution that granted degree
Dawcett Middleton	M.S., Chemistry	University of Oklahoma
Andrew Slagle	Ph.D., Chemistry	University of Oklahoma
Matthew Czapla	Ph.D., Chemical Education	University of Oklahoma
Emily McKee	M.S., Biochemistry	University of Oklahoma
adjunct faculty	M.S. or higher	varies

f. If available, information about employment or advanced studies of graduates of the program over the past five years:

Records show that 64 students transferred to another institution to continue their studies. Information about employment is not available. However, and Associates of Science degree in chemistry would generally be used for a student to transfer to an advanced degree program, not into the workforce.

g. If available, information about the success of students from this program who have transferred to another institution:

Of 64 students that transferred to another institution, 17 (27%) went on to achieve a degree.

B.5. Duplication and Demand:

In cases where program titles imply duplication, programs should be carefully compared to determine the extent of the duplication and the extent to which that duplication is unnecessary. An assessment of the demand for a program takes into account the aspirations and expectations of students, faculty, administration, and the various publics served by the program. Demand reflects the desire of people for what the program has to offer and the needs of individuals and society to be served by the program.

B.5. Duplication and Demand Issues:

Address Duplication:

There are no duplicate programs in the RSC area or adjoining communities.

Address Demand:

Demand for chemistry courses is increasing, while demand for the major remains steady.

B.5.a. Detail demand from students, taking into account the profiles of applicants, enrollment, completion data, and occupational data:

The demand for the chemistry degree has been relatively steady over the years. Also, demand for support programs (Pre-Medical-Dental, Pre-Pharmacy, Engineering and Allied Health) remains steady. However, the enrollment in chemistry courses has been significantly increasing due to requirements for nursing programs in the recent few years.

B.5.b. Detail demand for students produced by the program, taking into account employer demands, demands for skills of graduates, and job placement data:

The US Bureau of Labor Statistics reports an expected steady demand for STEM graduates. This will include the demand for chemistry graduates, and graduates in programs which rely heavily on chemistry courses (Engineering, Physics, Medicine, Dentistry, Pharmacy, Geology, etc.).

B.5.c. Detail demand for services or intellectual property of the program, including demands in the form of grants, contracts, or consulting:

The chemistry program is not a service program. Most students completing the chemistry degree are planning to transfer into a 4-year baccalaureate program in chemistry or into one of the supporting programs.

B.5.d. Detail indirect demands in the form of faculty and student contributions to the cultural life and well-being of the community:

Faculty regularly serve as judges for community science fairs. This fosters and promotes the relationship of the STEM faculty with the local schools and introduces potential new students to our programs.

B.5.e. The process of program review should address meeting demands for the program through alternative forms of delivery. Detail how the program has met these demands:

All chemistry courses are taught as traditional college level lectures with appropriate laboratory components. This is the level of instruction we believe is required for effective and safe coverage of our course syllabi.

B.6. Effective Use of Resources:

Resources include financial support, (state funds, grants and contracts, private funds, student financial aid); library collections; facilities including laboratory and computer equipment; support services, appropriate use of technology in the instructional design and delivery processes, and the human resources of faculty and staff.

The chemistry laboratories in our facility were recently renovated with modern lab benches, fume hoods, plumbing and safety equipment. In the chemistry laboratory we have very modern instrumentation and computer interface software/hardware to help with data collection and analysis. Additionally, our department has more than one computer laboratory, including one that is mostly dedicated to serving chemistry courses. The computer lab is used to supplement the chemistry lab and lecture components by allowing faculty to teach students how to execute calculations and prepare graphs using spreadsheet and other software. Faculty

take advantage of our college Learning Management System (D2L Brightspace), and an online chemistry homework system (Mastering Chemistry) to extend course interaction.

*Low Producing Program Reviews follow a different format and template.

Institutional Program Recommendations: (describe detailed recommendations for the program as a result of this thorough review and how these recommendations will be implemented, as well as the timeline for key elements)

Recommendations	Implementation Plan	Target Date
Increase faculty from 4 to 5.	-explain need to administration -advertise position -interview applicants -hire applicant	ASAP
Combine the Chemistry, Pre-Professional Health, and Pre-Pharmacy programs into a single Chemistry Program with *options* of Pre-Professional Health and Pre-Pharmacy.	-develop combined program -send through curriculum committee -implement new program in college catalog	Spring 2017

Summary of Recommendations:

	Department	School/College	Institutional
Possible Recommendations:			
Expand program (# of students)			
Maintain program at current level			
Reduce program in size or scope			
Reorganize program			
Suspend program			
Delete program			

Department/
Program Head _____ Date 1 Nov - 2017
(Signature)

Dean _____ Date 11/3/17
(Signature)