

STRATEGIC PLANNING AND INSTITUTIONAL EFFECTIVENESS
2013 - 2014 Unit Action Plan – Year Four

Unit Name: Math and Physical Science Department

<p>Unit Mission In support of the mission of the university, the school, and the department seeks to provide a solid general education component for all university students, provide curriculum in the physical sciences for students who are preparing for a baccalaureate-granting program, and provide programs of study to students presently in the work force, allowing them the opportunity to continue their education.</p>
<p>Goal 1: Advance Academic Excellence This Unit Action Plan Specifically Supports Commitment (1.1, 1.2, and 1.3)</p>

Plan for 2013-2014 This section due by May 17, 2013.				Report for 2013-2014 This section due by May 1, 2014.	
Objective	Action or Activity	Evaluation Measure	Performance Standard	Data/Findings	Status*
1.1 Provide creative and innovative learning environments	a).Geology majors need to have field experiences to fully understand the three dimensionality of geology.	a).Students are required to complete several geology problems and concepts while in the field.	a).Students are able to solve complex field processes and successfully (70% or greater) evaluate field-oriented problems.	a). After several comprehensive fieldtrips, students were able to perceive the three dimensional nature of geological processes. Eight-three percent (82.7%) of all students were able to answer essay questions at a 70% or greater success level. These essay questions required descriptive summaries of three-dimensional geologic processes and subsequent matching of those processes with the resultant geological feature(s).	a). Ongoing
	b). All college algebra sections are designed with program specific problem sets which increases retention rates	b). Retention is improved in College Algebra.	b). Development of discipline specific, customized College Algebra problem sets in MyMathLab. This course will be collaboratively designed and made available to all College Algebra students.	b). No data collected this year. This is due to the resignation of the lead faculty member.	b). Plans to pursue this at a later date.

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	c). Development of a Field Studies in Natural History Course that incorporates the physical and life sciences.	c). Students are able to exhibit a written understanding of the inter-relationships of the physical and life sciences by developing a written naturalist's journal.	c). Students are able to exhibit a written understanding of the inter-relationships of the physical and life sciences by developing a written naturalist's journal.	c). Twelve students (academic plus continuing education students) kept a detailed naturalist journal during the Natural History of Costa Rica course. These journals recorded all observed fauna and flora, observed geologic processes/features, and observed oceanographic processes/features. In addition, local ecological processes and conservation efforts were studied and recorded in the naturalist journal. Students included fauna and flora of various ecological zonal changes with altitude and with varying amounts of moisture. All student successfully completed this assignment.	c). Ongoing
	d). Development of an MPS Department Computer/Testing Center to allow for computer-based student research projects.	d). Physical development of a twenty-seat computer lab and hiring of adjunct faculty to proctor exams.	d). Students have more personal time in the classroom with the professor for review sessions and questions.	d). No progress on the development of this computer lab at this time.	d). Postponed until funding is granted.
	e). Incorporate use of the OU supercomputer (OSCER) in general chemistry to study molecular structures and properties.	e). Individual student user accounts will be set up for general chemistry students for AY 2012-13.	e). Students will use OSCER to build molecules and optimize their geometries, determine bond orbitals, and bond orbital energies.	e). Students successfully used OSCER to study molecules and their geometries. This extension of the curriculum was extremely successful and proved to be a valuable learning tool. This process will become an integrated part of the Chemistry curriculum.	e). Ongoing
	f). Incorporate digital data collection technology in CHEM 1415 lab experiments .	f). Purchase of Lab Quest units from Vernier.	f). Purchase enough Vernier Lab Quest units so students can work in pairs on each experiment, maximizing student engagement in the laboratory.	f). Some Vernier Lab probes were purchases and more will be added next fiscal year.	f). Ongoing

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	g). Build a separate organic chemistry/biochemistry laboratory to alleviate unsafe crowding that presently exists because of the equipment and chemicals needed to teach organic chemistry, general chemistry, and biochemistry, which all presently share the same laboratory room.	g). Construction of an organic/biochemistry laboratory.	g). Separating organic and biochemistry from general chemistry provides ample space in the laboratory for safe use of equipment and chemicals	g). No progress noted.	g). Re-scheduled until future funding acquired.
1.2 Strengthen curricular and co-curricular programs to enrich the overall student learning experience.	a). Develop new courses in the Geology Option. This option is lacking in majors-level courses for an Associate of Science Degree.	a). Development of an Elementary Oceanography and Invertebrate Paleontology course will result in a total of four geology majors courses (one/semester) for the AS program option.	a). These courses will be approved by the RSU College Curriculum Committee.	a). Both Elementary Oceanography (Fa13) and Invertebrate Paleontology (SP14) were offered as Special Topics courses. Both courses had adequate enrollments for a new course offering. These courses will be slightly modified and the curriculum paperwork will be submitted to the RSU Curriculum Committee.	a). Ongoing
	b). Develop a student research project in chemistry to be completed prior to graduation.	b). Outline and format of research project is determined.	b). Chemistry students complete a research project as part of their prerequisites to graduation.	b). No progress noted.	b). Ongoing
	c). Expand the chemistry laboratory experience to better prepare students and to prepare to	c). All listed equipment is purchased and installed.	c). Purchase the following equipment: 1. Microwave digester; 2. Liquid chromatography	c). No progress noted, except for funding received for the gas chromatograph. Additional funding will be sought for the other instrumentation.	c). Ongoing

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	<p>expand the AS to a BS program.</p> <p>d). Expand the geology program equipment to allow for course and degree expansion.</p>	<p>d). All listed equipment is purchased and installed.</p>	<p>coupled with a mass spectrometer; 3. Gas chromatography coupled with a mass spectrometer; 4. Inductively coupled plasma mass spectrometer; 5. Water filtration system that produces pure and ultra- pure water; and 6. a tabletop centrifuge.</p> <p>d). Purchase of equipment to include: 1. Slab saw; 2. Trim saw; 3. Thin-section machine; 4. Lapidary unit; 5. 3 sets of brass sieves; 7. 10 petrographic microscopes; 8. Scanning electron microscope; and 9. A high-powered 600x binocular stereoscope with camera attachment.</p>	<p>d). No progress as yet, however, industry partners are being made to help in receiving funding for this equipment and instrumentation.</p>	<p>d). Ongoing</p>

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1.3 Deliver new undergraduate and graduate degree programs to meet the economic and educational needs of northeast Oklahoma and the state.	a). Submit a prospectus that includes an employment feasibility study for a new BS degree program to the Office of the Vice President for Academic Affairs.	a). New degree proposal submitted to the University Curriculum Committee.	a). Complete an employment feasibility study and analysis for a new BS degree.	a). No progress as yet.	a). Ongoing
	b). Develop a BS program in Mathematics with an Option in Actuarial Sciences.	b). Degree program will be collaboratively designed and submitted for approval	b). Program will be approved through RSU Academic Affairs Office as well as OSRHE.	b). No progress noted.	b). Ongoing
Goal 2: Strengthen Enrollment Management: This Unit Action Plan Specifically Supports Commitment(2.3)					
2.3 Involve all constituencies of the university in student recruitment and retention effort.	The Geoscience Club assists in recruiting area high school students.	Extend invitations to area science and math clubs to RSU Geoscience club meetings and functions.	Areas students will join Geoscience club functions and meetings and become acquainted and comfortable with RSU's campus, students and faculty.	The Geoscience Club is pursuing involvement in STEM enrichment activities in area middle and high schools.	Ongoing

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Goal 3 -:Increase Diversity This Unit Action Plan Specifically Supports Commitment (3.1, 3.3)					
3.1 Provide curricular and co-curricular experiences that increase student understanding of and appreciation for other cultures.	Development of a Field Studies in Natural History course (see 1.3) that takes place in an overseas locality.	Students participating in overseas field courses (for example: Belize which has five distinct cultures and four distinct religious groups) will gain understanding of numerous cultures and religions through interactions with local inhabitants.	The Field Studies in Natural History Course will be approved by the RSU College Curriculum Committee.	Completed. This course was taught as a Special Topics course. The Natural History course was taught in the field in Costa Rica. The course was quite successful and student participation was eager and of an exemplary academic level. Plans are currently being made for future courses and to add this course to the course list in the Geology Option of the Physical Science AS Degree.	Ongoing
3.3 Promote an environment of tolerance and acceptance of diverse peoples and opinions.	RSU students taking Field Studies in Natural History will travel to various foreign countries and interact with the local peoples.	Students in the Natural History Field Course will interact and study and sciences alongside peoples of different cultures, socioeconomic standing, and religions.	In addition to learning field applications of the natural history sciences, students will learn and appreciate various cultures, their accomplishments, and their customs.	See previous entry. In addition the integration of the sciences, students were able to interact with the various cultures in Costa Rica. The students also visited a banana plantation to understand the growing and harvesting of bananas and the industry' impact of regional economics and ecology. Students visited different regions of Costa Rica and met individuals of several cultural groups and ethnicity.	Ongoing

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Goal 4: Leverage Resources This Unit Action Plan Specifically Supports Commitment 4.1					
4.1 Establish an institutional framework to obtain external funding.	Write grants to benefit the community and RSU.	Various grants will be submitted to funding agencies.	The grants will be funded.	No progress made.	Ongoing.
Goal 6: Promote Community Engagement This Unit Action Plan Specifically Supports Commitment 4.1, 2, 5, 5					
6.1 Expand collaborations and partnerships with business and industry as well as regional schools and community organizations.	Develop a relationship with area K-12 schools to establish an enhancement program in the STEM areas.	Area K-12 schools join in a partnership with the MPS department to enhance the STEM curriculum in their schools.	Enhancements of the STEM curricula include teach workshops, footlocker activities, service learning opportunities for RSU students, and in-class demonstrations of STEM topics.	Progress made, but more interactions with area teachers is needed to reach this goal.	Ongoing.
6.2 Establish curricular and co-curricular opportunities for students to cultivate civic skills and strengthen social responsibility.	a). Incorporate a Service Learning component of the geology courses to encourage mentoring and tutoring in area K-12 school. b). Chemistry Club events are planned to	a). Geology students and K-12 teachers agree to work together to form a relationship for science and math enrichment in K-12 classrooms. b). Chemistry Club develops community	a).Geology students have a significant presence in area K-12 classrooms assisting as tutors and mentors in the STEM disciplines. b). Chemistry Club represented at local	This successful completion of this goal is contingent upon the successful completion of goal 6.1. This is necessary for integration of the student presence and subsequent assistance with demonstrations within the STEM enrichment program developed in goal 6.1.	Ongoing

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	coincide with local community events, such as Chemical Safety Awareness. c). Chemistry students develop outreach activities with area schools.	contacts so that they can be present at local events. c). Chemistry students develop contacts with area schools to arrange for Chemistry demonstrations.	events. c). Chemistry students present chemistry demonstrations and enrichment activities in area schools.	No progress noted.	Ongoing
6.4 Establish community engagement partnerships that vary in scale and formality, including defined goals, high-quality content and desired outcomes.	Write a grant for STEM enrichment in rural NE Oklahoma school districts that will result in an improved learning environment in the classroom.	Collaboration with rural school districts to supply STEM support through making available footlocker activities (canned experiments and demonstrations), content specific teacher workshops, activity alignment with the Common Core Standards, and science field trips.	Grant supported by RSU and successfully funded.	No progress noted.	Ongoing

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6.5 Increase opportunities for area residents to participate in educational, cultural and recreational activities.	a). Students in the Chemistry Club can set up informational booths at various community events such as the garden show and the county fair to inform residents on chemistry-related issues such as fertilizer use and safe household chemical disposal.	a). The informational booth will be manned by students and faculty during the community events.	a). Students will set up an informational booth and develop materials for distribution under the supervision of RSU's chemistry professors.	No progress noted.	Ongoing

*Appropriate **Status** descriptors include the following: Completed, Ongoing, In Progress, Rescheduled for next year, Action/Activity withdrawn, or Other. If Other, please briefly describe whether the action or activity is completed, will continue, or has been modified for the coming year.

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Budget Request Supplement for Academic Year 2013-2014
 Year Three – Strategic Planning Cycle

This section due by May 17, 2013.							This section due by May 1, 2014
University Objective	Action for 2013-2014	Requested Resources				Estimated Cost	Was the Budget Request Approved?
		Human	Financial	(Enter Amount Approved)	Other (e.g., Technology)		(Enter Amount Approved)
1.2 Strengthen curricular and co-curricular programs to enrich the overall student learning experience.	Purchase and install equipment in geology and chemistry.				<u>GEOLOGY:</u> slab saw; trim saw; thin-section machine; lapidary unit; 3 sets of brass sieves; one high-powered (600x) binocular stereoscope with camera attachment)	\$100,000	
					<u>CHEMISTRY:</u> Microwave digester; Liquid chromatography coupled with a mass spectrometer; Gas chromatography coupled with a mass spectrometer; water filtration system that produces pure and ultra-pure water; tabletop centrifuge.	\$200,000	

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1.3. Deliver new undergraduate and graduate degree programs to meet the economic and educational needs of northeast Oklahoma and the state.	Plan for the development of BS degrees in computational Mathematics and/or Chemistry as well as a BS degree in Actuarial Sciences.					none	
2.3 Involve all constituencies of the university in student recruitment and retention efforts.	Invite local high school science students to participate in Geoscience Club activities.					none	
4.2 pursue optimal staffing throughout the university	Develop an appropriate budgetary and programmatic justification and request, advertise, and fill a faculty position in the physical sciences	Instructor-level faculty member *- see note in last column		\$37,000 *\$44,500– see note in last column		none	*We have interviewed, and are in the process of making an offer, for a tenure-track math position.
6.1 Expand collaborations and partnerships with business and industry as well as regional schools and community organizations.	Continue to encourage Geology students to join and participate in the Tulsa Geology Society.					none	

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<p>6.2 Establish curricular and co-curricular opportunities for students to cultivate civic skills and strengthen social responsibility.</p>	<p>Students will assist faculty in area elementary schools to strengthen and enrich STEM education.</p>					<p>none.</p>	
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