STRATEGIC PLANNING AND INSTITUTIONAL EFFECTIVENESS

2012-2013 Unit Action Plan – Year Three

Unit Name: Mathematics and Physical Sciences

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.

Goal 1: Advance Academic Excellence
This *Unit Action Plan* Specifically Supports Commitment(1.1, 1.2, and 1.3)

Plan for 2012-2013 This section due by May 4, 2012.				Report for 2012-2013 This section due by May 17, 2013.	
Objective	Evaluation Measure	Performance Standard	Action	Data/Findings	Status
1.1 Provide creative and innovative learning environments.	a). Students are able to solve complex geology problems, processes and concepts while in the field.	a).Learning objective-based field trips are required in each geology major's course.	a).Geology majors need to have field experiences to fully understand the three dimensionality of geology.	a). Geology majors continue to improve in process thinking and visualization of three dimensionality with each successive course. Each geology course incorporates field experiences through field trips to hone these necessary skills.	a). Ongoing
	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). All college algebra sections are designed with program specific problem sets which increases retention rates	b). Math faculty are collaborating to continue to develop problem sets and distribute them throughout all College Algebra courses. Student retention data is not available at this time.	b). Ongoing
	c). Students are able to exhibit a written understanding of the inter-relationships of the	c). The Field Studies in Natural History Course will be approved by the RSU College Curriculum	c). Development of a Field Studies in Natural History Course that incorporates the	c). Curriculum has been completed and will be sent to the curriculum committee in the Fall 2013 semester. The first Field Studies in Natural History Course was conducted with fourteen participants under the prefix of SP 2950. Student in this Intersession course travelled to	c). Ongoing

	physical and life sciences by developing a written naturalist's journal.	Committee.	physical and life sciences.	Costa Rica and studies geology, oceanography, marine biology, and ecology.	
	d). Development of a twenty-seat computer lab and hiring of adjunct faculty to proctor exams.	d). More classroom time is developed for review and in depth discussion of materials and or class projects in lieu of administering exams during class time.	d). Development of an MPS Department Computer/Testing Center to allow for computer-based student research projects.	d). No progress on the development of this computer lab at this time.	d).Post-poned until funding is granted.
	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). Incorporate use of the OU supercomputer (OSCER) in general chemistry to study molecular structures and properties.	e). Students used OSCER for two lab assignments in CHEM 1315, two lab assignments in CHEM 1415, and one class assignment in CHEM 3125.	e). Ongoing
	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). Incorporate digital data collection technology in CHEM 1415 lab experiments.	f). Students use Vernier LabQuest to collect data in 7 CHEM 1415 experiments.	f). Ongoing.
	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). 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	g). No progress noted.	g).Re-scheduled until future funding acquired.

			chemistry, and biochemistry, which all presently share the same laboratory room.		
1.2 Strengthen curricular and co-curricular programs to enrich the overall student learning experience.	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). Develop new courses in the Geology Option. This option is lacking in majors-level courses for an Associate of Science Degree.	a). Curriculum documents have been approved by the MPS Department Curriculum Committee and will be submitted to the College Curriculum Committee at the beginning of the Fall 2013 semester.	a). Ongoing
	b).).Outline and format of research project is determined.	b).Chemistry students complete a research project as part of their prerequisites to graduation.	b). Develop a student research project to be completed prior to graduation.	b). Until a four-year chemistry degree is developed, there will be no progress in this endeavor.	b). Re-scheduled until future tunding is acquired.
	c). All listed equipment is purchased and installed.	c). Purchase the following equipment: 1. Microwave digester; 2. Liquid chromatography 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.	c). Expand the chemistry laboratory experience to better prepare students and to prepare to expand the AS to a BS program.	c). Equipment has been identified for purchase but no purchases have been made.	c). Ongoing
	d). All listed equipment is purchased and installed.	d). purchase of equipment to include: 1. Slab saw; 2. Trim saw; 3. Thin-section	d). Expand the geology program equipment to allow for course and	d). Funding is still being sought to purchase most of the listed the required equipment. However, three sets of brass sieves have been purchased and additional equipment will be purchased as funding	d). Ongoing

		machine; 4. Lapidary unit; 5. 6 sets of brass sieves; 7. 10 petrographic microscopes; 8. Scanning electron microscope; and 9. A high-powered 600x binocular stereoscope with camera attachment.	degree expansion.	becomes available.	
1.3 Deliver new undergraduate and graduate degree programs to meet the economic and educational needs of northeast Oklahoma and the state.	a). New degree proposal submitted to the University Curriculum Committee b). Degree program will be collaboratively designed and submitted for approval.	a). Complete an employment feasibility study and analysis for a new BS degree program by December 31, 2011. b).Program will be approved through RSU Academic Affairs Office as well as OSRHE. .	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 by the end of AY 2012. b).Develop a BS program in Mathematics with an Option in Actuarial Sciences.	a). Preliminary plans have been discussed among faculty for the development of potential BS degrees in computational mathematics and/or Chemistry. b). No progress at this time.	a). Re-scheduled for next year b). Re-schedule for next year.

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 efforts.	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 assists in recruiting area high school students.	The Geology Club assisted area high schools and middle schools during the Aerogames on campus in November. Their interactions with area students has resulted in several inquiries about RSU programs.	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.	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.	Development of a Field Studies in Natural History course (see1.3) that takes place overseas.	The first Field Studies in Natural History course was completed in the Spring 2013 Intersession. Fourteen participants studied geology, oceanography, ecology, and marine biology for eleven days in Costa Rica. While there, they interacted with Costa Ricans of Spanish descent and of Caribe Indian descent. They also had lectures about Costa Rican history, religions, and cultural development.	Ongoing
3.3 Promote an environment of tolerance and acceptance of diverse peoples and opinions.	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.	RSU students taking Field Studies in Natural History will travel to various foreign countries and interact with the local peoples.	See above. In addition to the above, students interacted throughout Costa Rica with the people of various regions and communicated through English and rudimentary Spanish.	Ongoing

Goal 4 -: Leverage Resources This *Unit Action Plan* Specifically Supports Commitment (4.1)					
4.1 Establish an institutional framework to obtain external funding.	Various grants will be submitted to funding agencies.	The grants will be funded.	Write grants to benefit the community and RSU.	Dr. Min Soe wrote and received an NSF grant for $75,000. In addition, a matching endowment was set up with the Oklahoma Geoscience Foundation.	Ongoing

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Goal 6 -: Promote Community Engagement This *Unit Action Plan* Specifically Supports Commitment (6.1, 6.2, 6.4, and 6.5)					
6.1 Expand collaborations and partnerships with business and industry as well as regional schools and community organizations.	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.	Develop a relationship with area K-12 schools to establish an enhancement program in the STEM areas.	Dr. Phillips (VP of Development) and Dr. Graham are working on a collaborative effort to provide STEM outreach in NE Oklahoma elementary schools. Along with this project, they are pursuing a partnership with the Jason Project to provide STEM enrichment curriculum and supplies to NE Oklahoma middle schools.	Ongoing
6.2 Establish curricular and co-curricular opportunities for students to cultivate civic skills and strengthen social responsibility.	a). Geology students and K-12 teachers agree to work together to form a relationship for science and math enrichment in K-12 classrooms.	a).Geology students have a significant presence in area K-12 classrooms assisting as tutors and mentors in the STEM disciplines.	a). Incorporate a Service Learning component of the geology courses to encourage mentoring and tutoring in area K-12 school.	a). No data at this time, however the Geoscience club has volunteered time and effort to assist the Geology Center of Tulsa during Mayfest as well as onsite assistance in the Center which provides STEM enrichment to area K-12 schools.	a).Ongoing
	b). Chemistry Club develops community contacts so that they can be present at local events.	b). Chemistry Club represented at local events.	b). Chemistry Club events are planned to coincide with local community events, such as Chemical Safety Awareness.	b). There was no chemistry club in AY 2012-13.	b). Postponed
	c). Chemistry students develop contacts with area schools to arrange for Chemistry demonstrations.	c). Chemistry students present chemistry demonstrations and enrichment activities in area schools.	c). Chemistry students develop outreach activities with area schools.	c). There was no chemistry club in AY 2012-13.	c).Postponed

6.4 Establish community engagement partnerships that vary in scale and formality, including defined goals, high-quality content and desired outcomes.	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.	Write a grant for STEM enrichment in rural NE Oklahoma school districts that will result in an improved learning environment in the classroom.	No data or results at this time.	Re-scheduled for next year.
6.5 Increase opportunities for area residents to participate in educational, cultural and recreational activities.	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.	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). There was no chemistry club in AY 2012-13.	a). Post-poned

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Budget Request Supplement for Academic Year 2012-2013

Year Three – Strategic Planning Cycle

University Objective	Was the Budget Request Approved?	Requested Resources				Estimated Cost	Was the Budget Request Approved?
	(Enter Amount Approved)	Human	Financial	(Enter Amount Approved)	Other (e.g., Technology		(Enter Amount Approved)
1.1 Provide creative and innovative learning environments.	a). Geology majors need to have field experiences to fully understand the three dimensionality of geology.		Additional field trips will be added so an increase in the Motor Pool budget will be necessary.			Increase of $2000.00 per fiscal year.	0
1.1 Provide creative and innovative learning environments.	b).Develop a BS program in Mathematics with an Option in Actuarial Sciences.					None	0
1.1 Provide creative and innovative learning environments.	c). Development of a Field Studies in Natural History Course that incorporates the physical and life sciences.					none	0

1.1 Provide creative and innovative learning environments.	d). Development of an MPS Department Computer/Testing Center to allow for computer-based student testing and statistical analysis for research projects.	Use of Adjunct Faculty to proctor exams.		Development of a dedicated computerized MPS Testing Center.	Major cost will consist of 30 computer stations equipped with 30 computers (CPU, Monitor, keyboard, mouse and Internet connectivity). The lab would need one laser printer and one lockable filing cabinet.	Determined by Academic Computer Services. (~$45,000)	0
1.1 Provide creative and innovative learning environments.	e). Incorporate use of the OU supercomputer (OSCER) in general chemistry to study molecular structures and properties.					none	0
1.1 Provide creative and innovative learning environments	f). Incorporate digital data collection technology in CHEM 1415 lab experiments.				Purchase of four Vernier packages @$742 each.	$2968	0
1.1 Provide creative and innovative learning environments	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). Development of a dedicated organic/biochemistry chemistry laboratory to ensure student and instructor safety.	unknown	unknown	0
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. b). Develop a Chemistry student				b). purchase of minor	a).None	0

	research project to be completed prior to graduation. c).Expand the chemistry laboratory experience to better prepare students and to prepare to expand the AS program to a BS program. d). Expand the geology program to allow for course and deree expansion.				chemicals/supplies c). Purchase the following equipment: 1. Microwave digester; 2. Liquid chromatography 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. d).Purchase geology equipment to include: : 1. Slab saw (~$7,000); 2. Trim saw (~$800); 3. Thin-section machine (~$20,000); 4. Lapidary unit ($3000); 5. 6 sets of brass sieves ($459/set); 7. 10 petrographic microscopes ($1000 each); 8. Scanning electron microscope (awaiting quote); and 9. A high-powered 600x binocular stereoscope with camera attachment (awaiting quote).	b).~$500. c). d). ~$35000	0 0 0
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 by the end of AY 2012. b). Develop a BS program in mathematics with an option in Actuarial Sciences.					a). pending b). none expected	0 0

2.3 Involve all constituencies of the university in student recruitment and retention efforts.	Assist in recruitment by inviting area high school science clubs and organizations to participate in the RSU Geology club activities.					none	0
3.1 Provide curricular and co-urricular experiences that increase student understanding of and appreciation for other cultures.	RSU students enrolled in the proposed course, Field Studies in Natural Sciences, will interact with local cultures, religions, and visiting scientists in a Central American country.					none	0
4.1 Establish an institutional framework to obtain external funding.	Pursue various grants to enhance K-12 STEM enhancement as well as grants to provide direct benefits to MPS students.					none	0
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 teachers and administrators to help establish a STEM enrichment program.					none	0

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 schools. b). Plan Chemistry Club events to coincide with local community events, such as Chemical Safety Awareness. c). Chemistry students develop outreach activities with area schools.					a). none b). There might be a possible booth fee required by some events. c). none	0 0 0