**Unit Name: Math and Physical Science Department**

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| **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 : 2014-2015**  **This section due by June 2, 2014.** | | | | **Report for 2014-2015**  **This section due by June 1, 2015.** | |
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| **Objective** | **Action or Activity** | **Evaluation Measure** | **Performance Standard** | **Data/Findings** | **Status\*** |
|  | a).Geology majors need to have field experiences to fully understand the three dimensionality of geology.  b). All college algebra sections are designed with program specific problem sets which increases retention rates    c). Development of a  Field Studies in Natural History Course that incorporates the physical and life sciences.  d). Development of an MPS Department Computer/Testing Center to allow for computer-based student research projects.  e). Incorporate use of the OU supercomputer (OSCER) in general chemistry to study molecular structures and properties.  f). Incorporate digital data collection technology in CHEM 1415 lab experiments .  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. | a).Students are required to complete several geology problems and concepts while in the field.  b). Retention is improved in College Algebra.  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.  d). Physical development of a twenty-seat computer lab and hiring of adjunct faculty to proctor exams.  e). Individual student user accounts will be set up for general chemistry students for AY 2012-13.  f). Purchase of Lab Quest units from Vernier.  g). Construction of an organic/biochemistry laboratory. | a).Students are able to solve complex field processes and successfully (70% or greater) evaluate field-oriented problems.  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.  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.  d). Students have more personal time in the classroom with the professor for review sessions and questions.  e). Students will use OSCER to build molecules and optimize their geometries, determine bond orbitals, and bond orbital energies.  f). Purchase enough Vernier Lab Quest units so students can work in pairs on each experiment, maximizing student engagement in the laboratory.  g). Separating organic and biochemistry from general chemistry provides ample space in the laboratory for safe use of equipment and chemicals | a). Number of students:15  13/15 (86.8%) Physical Geology students were able to determine the structural components of the Arbuckle Mts. They were able to determine whether gravitation, tensional or compressional forces occurred for each structural element studied.  Number of students: 8  8 out of 8 (100%) of Oceanography students were able to determine broad regional geological processes such as several sea-level changes during the lower Cretaceous time (~125 million years ago).  b). Change in faculty has temporarily slowed this progress.  c). Course was cancelled, but scheduled again for SP15.  d). At this point in time, there is no physical space for this endeavor. However, with the building of a new Science building, this would certainly be a positive addition to the Department.  e). Students have been using OU’s supercomputer in most sections of general chemistry.  f). Students have been using Vernier Lab Quest units to perform eight of ten lab experiments in CHEM 1415. Enough equipment was purchased to allow more student engagement in the laboratory.  g). No space has been allocated for this much needed organic/biochemistry laboratory. Because of the limited chemistry laboratory space, many students are not able to take their chemistry courses in a continuous sequence at RSU. Unfortunately, this causes many to go elsewhere for these courses. A solution to this dilemma would to be to build a new science building to replace Loshbaugh Hall, which would expand and improve the laboratory space in all the sciences. In this way, all the sciences on RSU main campus would be modernized and improved to increase the competiveness of the RSU in the sciences.  A new science building would bring a solution to two issues. First it would provide more laboratory space to separate organic chemistry/biochemistry and general chemistry labs, second, new design of the laboratory rooms, recently built at TCC and other regional schools, provides safer environment for the students. Upper level courses like Organic chemistry require the use of fume hoods, which are safer and more efficient in the new design versus what we presently have. Also, the current number of fume hoods we have is not enough for many experiments that could be performed in organic labs. More storage space and separation of organic and inorganic chemicals would also provide safer environment for the students. The current design of the laboratory rooms doesn’t allow accommodation of chemical instruments like Gas chromatography, Infrared spectrometry, Atomic absorption, use of which could be incorporated in the upper level course curriculum making our courses more competitive and better than the ones offered by TCC or other regional schools. The number of students doing research projects is increasing and we are unable to provide enough space in our labs to accommodate this need. | Completed  Completed  Ongoing  Ongoing  No progress in obtaining funding  Completed  Completed  No progress made |
| **1.2 Strengthen curricular and co-curricular programs to enrich the overall student learning experience.**  **1.3 Deliver new undergraduate and graduate degree programs to meet the economic and educational needs of northeast Oklahoma and the state.** | a). Develop a Physical Science BS in Physical Science Laboratory Specialist with a Geoscience Analyst Option.  b). Develop a student research project in chemistry to be completed prior to graduation.  c). Expand the chemistry laboratory experience to better prepare students and to prepare to expand the AS to a BS program.  d). Expand the geology program equipment to allow for course and degree expansion.  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.  b).Develop a BS program in Mathematics with an Option in Actuarial Sciences. | a). Once the letter of Intent is processed by the State, the curriculum for this option will be developed and submitted to the University Curriculum Committee.  b).Outline and format of research project is determined.  c). All listed equipment is purchased and installed.  d). All listed equipment is purchased and installed.  a). New degree proposal submitted to the University Curriculum Committee.  b). Degree program will be collaboratively designed and submitted for approval | a).The curriculum will be approved by the RSU College Curriculum Committee.  b).Chemistry students complete a research project as part of their prerequisites to graduation.  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 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.  a). Complete an employment feasibility study and analysis for a new BS degree.  b).Program will be approved through RSU Academic Affairs Office as well as OSRHE. | a). Advisory Committee members are being identified to assist in the development of the industry-needed curriculum. The curriculum will be determined after the consideration of the industry partners’ advice.  b). No research project specifically for chemistry student that I’m aware of. I have several chemistry projects accomplished by biology students.  c). As funds become available, the department will begin to purchase the listed equipment.  d). Purchased:  1 petrographic microscope  1 high powered (600x) binocular microscope with camera attachment and 3 sets of brass sieves.  Plans are made to continue to continue to purchase the much needed equipment to be able to properly train and education geoscience students..  a). No progress made to date.  b). No progress made to date. | In progress.  No progress  No progress.  Ongoing.  Ongoing  Reschedul-ed for next year |
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| **Goal 2 : Strengthen Enrollment Management**  **This Unit Action Plan Specifically Supports Commitment (2.3 and 2.4)** | | | | | |
| **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. | All the geology students graduated in the SP14 semester. Plans are to re-activate the Geoscience Club with the new geoscience students. | Ongoing |
| **2.4 Implement a continuous quality improvement program designed to provide academic and student services that are effective, efficient and personable.** | a). Develop a student advising system within the MPS department that is more efficient by organizing student files and supplement support documents. Included in the advising will be printed sheets concerning local job opportunities for each degree option. | a), Advising students will be faster and more personable. | a). Students will be better prepared for entry into local job opportunities. | a). Student files have been organized along with supplemental support documents. Data sheets of local job opportunities are being researched and compiled for each discipline/degree. | Ongoing |
| **Goal 3 : Increase Diversity**  **This Unit Action Plan Specifically Supports Commitment (3.1 and 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 (see1.3) that takes place overseas. | 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. | This course was cancelled in Sp14, but is being taught in Sp15 with 11 participants. | Completed |
| **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. | The Natural History course has course content, lessons, PowerPoint lectures, and field activities developed for Belize and Costa Rica. Other destinations are in progress. | Completed and ongoing. |
| **Goal 4 : Leverage Resources**  **This Unit Action Plan Specifically Supports Commitment (4.1 and 4.3)** | | | | | |
| **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. | Although this was an interest in the department, no appropriate grants have been found that meet the spirit of the endeavor. | No progress made. |
| **4.3 Enhance library operations to meet the instructional needs of all campuses.** | Increase the collection of geology-related books, maps, drilling reports and publications through purchase and donations. | Students have more geology publications, maps, drilling reports and out-of-print publications for use in research projects. | Donations are received and added to the geology publications that are available. | Several boxes of geology books, bulletins and professional papers have been donated. These items are in the process of being cataloged and stored in the geology lab for now. Discussion with the library staff will be made concerning adding some or all of them to the library’s collection. | Completed |
| **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.** | 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. | Some science demonstrations with area elementary students are being made in the Chemistry area. Much more is desirable in the other disciplines and teacher workshops are in planning stage. | 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 coincide with local community events, such as Chemical Safety Awareness.  c). Chemistry students develop outreach activities with area schools. | 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 contacts so that they can be present at local events.  c). Chemistry students develop contacts with area schools to arrange for Chemistry demonstrations. | 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 events.  c). Chemistry students present chemistry demonstrations and enrichment activities in area schools. | a). Due to the graduation of a large percent of the Geology majors, the Geology Club has been inactive in the Community Service projects.  b).Chemistry Club participated in the following events: The Kiddie Carnival, Homemade root beer and grilled cheese night, The Easter egg hunt, the Earth day Expo, 5k and Tie dye day.  c). No activities to report. | a). No progress made.  Ongoing  Reschedul-ed for next year. |
| **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 grant has been identified as yet. | No progress |
| **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. | a). The low number of students involved in Chemistry Club in the beginning of the year and many events the Chemistry Club has been involved in on campus prevented from completing these activities. | No progress |

\*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.

**Budget Request Supplement for Academic Year 2014-2015**

**Year Five – Strategic Planning Cycle**

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| **This section due by June 2, 2014.** | | | | | | | **This section due by June 1, 2015** |
| **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. |  |  |  | GEOLOGY: slab saw; trim saw; thin-section machine; lapidary unit; 3 sets of brass sieves; microscope warmer; one high-powered (600x) binocular stereoscope with camera attachment);  One petrographic microscope with digital camera  Eight computers and one laser printer for use with geological software package that is necessary for the degree.  CHEMISTRY: 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. | $100,000  $200,000 | No  No |
| **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 | None requested |
| **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 | None requested |
| **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 | Geology tenure-track position |  | $44,000 |  |  | No |
| **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 | None requested |
| **6.2 Establish curricular and co-curricular opportunities for students to cultivate civic skills and strengthen social responsibility.** | Students will assist faculty in area elementary schools to strengthen and enrich STEM education. |  |  |  |  | none. | None requested |