U.S. Department of Education
Grant Performance Report Cover Sheet (ED 524B)
Check only one box per Program Office instructions.
[X] **Annual Performance Report** [ ] **Final Performance Report**

OMB No. 1894-0003
Exp. 04/30/2014

General Information

1. PR/Award #: P031C110184 2. Grantee NCES ID#: 187985
(Block 5 of the Grant Award Notification - 11 characters) *(See instructions. Up to 12 characters)*

3 Project Title: Project for Inclusive Undergraduate STEM Success (UNM STEM Project)
(Enter the same title as on the approved application.)

4. Grantee Name *(Block 1 of the Grant Award Notification)*: University of New Mexico – VP for Student Affairs

5. Grantee Address *(See instructions.)* *University of New Mexico, Office of Student Affairs, MSC05 3410, 1 University of New Mexico, Albuquerque, NM 87131-0001*

6. Project Director *(See instructions.)* Name: Tim Schroeder Title: Project Director, STEM Gateway
Ph #: (505) 277 - 1761 Ext: ( ) Fax #: (505) 277 - 1782
Email Address: timschroeder@unm.edu

Reporting Period Information ***(See instructions.)***

7. Reporting Period: From: 10/01/2011 To: 09/30/2012 (mm/dd/yyyy)

Budget Expenditures ***(To be completed by your Business Office. See instructions. Also see Section B.)***

8. Budget Expenditures

	Federal Grant Funds	**Non-Federal Funds** ***(Match/Cost Share)***
a. Previous Budget Period		
b. Current Budget Period	$469,012.48	
c. Entire Project Period *(For Final Performance Reports only)*		

Indirect Cost Information ***(To be completed by your Business Office. See instructions.)***

9. Indirect Costs

a. Are you claiming indirect costs under this grant? ___Yes _X_No

b. If yes, do you have an Indirect Cost Rate Agreement approved by the Federal Government? ___Yes ___No

c. If yes, provide the following information: N/A

Period Covered by the Indirect Cost Rate Agreement: From: _____/_____/_____ To: _____/_____/_____ (mm/dd/yyyy)

Approving Federal agency: ___ED ___Other *(Please specify)*:

_____

Type of Rate *(For Final Performance Reports Only)*: ___ Provisional ___ Final ___ Other *(Please specify)*: _____

d. For Restricted Rate Programs (check one) -- Are you using a restricted indirect cost rate that: N/A

___ Is included in your approved Indirect Cost Rate Agreement?

___ Complies with 34 CFR 76.564(c)(2)?

Human Subjects (Annual Institutional Review Board (IRB) Certification) ***(See instructions.)***

10. Is the annual certification of Institutional Review Board (IRB) approval attached? ___Yes ___ No _X_ N/A

Performance Measures Status and Certification ***(See instructions.)***

11. Performance Measures Status

a. Are complete data on performance measures for the current budget period included in the Project Status Chart? _X__Yes __ No

b. If no, when will the data be available and submitted to the Department? (mm/dd/yyyy)

12. To the best of my knowledge and belief, all data in this performance report are true and correct and the report fully discloses all known weaknesses concerning the accuracy, reliability, and completeness of the data.

Nancy Carr — Title: Sponsored Research Project Specialist

Name of Authorized Representative

Nancy Carr

Signature: _____ Date: 12/05/2012

UNIVERSITY OF NEW MEXICO
Project for Inclusive Undergraduate STEM Success (STEM Gateway Program)
PROGRESS TOWARDS GRANT OBJECTIVES

The Project for Inclusive Undergraduate STEM Success (branded as STEM Gateway at the University of New Mexico) has completed a successful first year of operation. The STEM Gateway program includes four interconnected initiatives:

STEM GATEWAY COURSE REFORM PROJECT

The Gateway Science and Math Course Reform Program has successfully initiated three (3) course-reform projects for the 2012-2013 academic year.

- College Algebra (MATH 121): Enrolled by approximately 5000, mainly STEM-aspiring students annually at either UNM or CNM and currently a significant barrier to degree progress for STEM students who did not benefit from exceptional math learning experiences in high school. In the Fall of 2012, eight (8) sections of the reformed MATH 121 were offered by four (4) reform team members, enrolling 496 students.
- General Chemistry II (CHEM 122): Enrolled by approximately 1300 STEM majors annually at either UNM or CNM. Required for 25 degree programs, General Chemistry is the largest course sequence that is the gateway to nearly all STEM degrees. The course-reform proposal builds off of reforms initiated in General Chemistry I prior to the beginning of the grant and integrates reforms across both courses. In the Fall of 2012, one section of the reformed CHEM 122 was offered, enrolling 37 students.
- General Physics I (PHYC 160) and General Physics II (PHYC 161): Calculus-based Physics enrolled by approximately 600 STEM majors annually at UNM, particularly a significant gateway for Engineering majors. The focus of the PHYC 160 reform project is the redesign of PHYC 167 (Problems in General Physics). PHYC 167 is currently offered as an optional course; supplemental to PHYC160. The PHYC team increased the use of active learning in PHYC 167 and strengthened the content-based connections between PHYC160 and PHYC 167. Each of the PHYC 167 sections were taught by members of the PHYC reform team. For one section of PHYC 160 in the Fall, enrollment in PHYC 167 was required rather than optional. The team is studying the impact of a required, improved, and better-connected PHYC 167 class on student achievement rates in PHYC 160. In the Fall of 2012, five (5) sections of PHYC 167 were offered by four (4) reform team members, enrolling 159 students.

PEER LEARNING FACILITATOR PROJECT:

The STEM Gateway Peer Learning Facilitator (PLF) Program began in the Spring of 2012 semester with 27 PLFs and 3 Student Project Assistants. These PLFs served 10 instructors who taught a total of 15 sections in Math, Chemistry, and Earth & Planetary Science gateway courses. 1161 students were enrolled in these sections as of fall census date, with 84.4% completing the course, and 61% earning A-B-C-CR grades. 807 Hispanic and low-income students were enrolled in these sections as of fall census date (70% of the total population), with 83% completing the course, and 58.6% earning A-B-C-CR grades. In the Fall of 2012, forty (40) PLFs served 15 instructors in 23 sections in Math, Physics, Chemistry and Earth & Planetary Science gateway courses. Course achievement rates for these sections will not be collected until the conclusion of the Fall 2012 semester. In the course of the semester, the PLF efforts include the following: (1) in-class assistance with learning activities, (2) out-of-class office hours for students to request additional assistance, (3) frequent out-of-class meetings with the instructor to align PLF efforts with lesson plans, (4) occasional grading of low-stakes in-class exercises and homework driven by the class activities, and (5) weekly PLF training sessions.

STEM STUDENT INTEREST GROUP PROJECT:
The syllabus for the STEM Student Interest Groups (SSIG) was developed by the Office of Support for Effective Teaching (OSET), and includes three (3) primary goals: (1) connecting gateway core courses to academic degrees in the experiences of first and second year students, (2) introducing students to the STEM degree programs and departments they are most interested in, and (3) developing soft skills that will help students succeed in their STEM courses. SSIGs make heavy use of active-learning techniques. For the Fall 2012 semester, twelve full-semester SSIGs were created, and eight (8) late-start SSIGs were created. These included options for the following majors: Biology, Engineering, Earth & Planetary Sciences, Environmental Science and Chemistry. They shadowed the following gateway courses: CHEM 121 (General Chemistry 1), MATH 150 (Pre-calculus Mathematics), MATH 180 (Elements of Calculus 1) and PHYC 151 (General Physics).

DATA DRIVEN PRIORITIZATION PROJECT:
During the first year of the STEM Gateway program, we have focused on building the infrastructure necessary to explore the research questions posed in the grant application. Access to databases within the Office of Institutional Research (OIR) has been secured. Technology required to access and analyze this data has been purchased, installed and aligned with OIR. The definitions and baseline foundations needed to track student enrollment and achievement patterns were constructed. The STEM Gateway Institutional Researcher is active on numerous campus committees that are assessing and improving institutional effectiveness regarding student achievement (including STEM students, Hispanic students and low-income students). The efforts and data collection/analysis measures used by the STEM Gateway program are being aligned with those of the UNM community in order to ensure sustainability of grant initiatives, and to strengthen the impact of the STEM Gateway program.

Formal research projects in Year One include:

- Math Course Completion and STEM Degrees at UNM
- Predictors and Trigger Points for Student Achievement in STEM Degrees at UNM
- Grade Distribution Patterns in Gateway STEM courses at UNM
- Qualitative Research into Hispanic Student Experience in STEM at UNM

CONTRIBUTIONS MADE TO PRACTICE / LESSONS LEARNED:

- **STEM Gateway Course Reform:**
  - As shown by somewhat similar projects at other universities (e.g., University of Colorado, University of British Columbia, Miami University) it is important to empower Faculty to plan their own changes with facilitated support on best practices rather than mandating specific approaches. It is also important to approach teams of Faculty, and not just individuals, in order to initiate sustainable change. Not only does teamwork translate as sharing work and broadening the base for obtaining ideas, but changes are more likely to be sustained and expanded when a large part of the instructional team for a course is involved in the project, and not just an individual teacher.
- **Peer Learning Facilitators:**
  - The individual work of the PLFs (in and out of the classroom) is the greatest success of the program. Their commitment to student learning, their dedication to supporting faculty goals, and their drive to always improve their techniques and knowledge are the reasons the PLF program achieves its outcomes. The PLFs are open and flexible when it comes to new and developing projects under the grant. They serve their students with patience, compassion, and humor, as well as a strong grasp of the academic material.
  - (Re)Define success. We repeated expectations for the PLFs frequently over the course of the semester, reminding them often that they were not expected to prevent every student from failing, and that trying to do so would take precious attention away from struggling students who actively used the supportive resources available to them. To pull them back to the big picture, we will incorporate more PLF training sessions in the fall that deal with data from previous semesters and familiarizing them with specific grant language. We also plan to expose them to more departments on campus by

inviting guest speakers and other representatives, so that they have a greater understanding of what the university community looks like.
    - Let them know you trust their judgment. Because the PLFs do not work in a centralized location, they must learn to experiment with unsupervised autonomy. As young academics, they already do this in their own classes, forming goals and plans for each assignment and judging the results accordingly. However, we hope that they will learn to trust themselves in a professional environment, too. We plan to work more with the experienced PLFs in the fall semester to mentor the new PLFs in the classroom. During training sessions, we also intend to discuss trouble-shooting scenarios as a group. As my experience revealed in the spring, the PLFs tend to support each other when given a forum in which to collaborate.
    - Let them go. Possibly the most difficult time for a mentor is the moment when he or she realizes it may be time for their mentees to move on. Being a supervisor for the PLFs was no different. PLFs love their work. They are good at their job. They like their faculty members. They mentor other PLFs. However, there often comes a point when the healthiest choice for them is to leave the program. As we came to learn, some student employees will go to extremes in attempts to overcommit. They often confuse "can" with "should," taking on more and more unless someone reins them in. It is the mentor and supervisor's job to do so.
- **STEM Student Interest Groups:**
    - Most recruitment efforts that we utilized to reach potential students failed. Only direct email appeared to have any impact, and that was mostly limited to Biology students. Additional innovative recruitment methods are necessary to better reach students.
    - There appears to be a disconnect between the method of delivery for the SSIGs and competing federal, state and institutional pressures. While the majority of the STEM Gateway grant is built upon the improvement of current practices (promotion of active learning within current math and science core courses), the SSIG program adds an additional course that did not exist before the grant. However, discussions at the New Mexico State Legislature and Higher Education Department have stressed the need to reduce time to graduation for undergraduate students. Likewise this pressure is reflected in federal financial aid policy revisions over the past few years. Discussions at UNM have echoed this desire to reduce the number of elective credits earned by students en route to their degrees. As a result, anecdotal evidence suggests that most add-on courses at UNM are struggling for enrollments. The use of a supplemental course that does not fit into any STEM degree in any way other than as a general elective appears to be contrary to these pressures. It may be necessary to work with UNM partners to develop strategies which meet the SSIG outcomes, but which are embedded in current courses, or in new courses that will be required for students in STEM majors.
    - Most instructors from the SSIGs report that students are disengaged in these sections. It is important for other Universities developing SSIGs to address this issue up-front. At this time anecdotal evidence points to the following problems with the UNM SSIG model (in its current form):
        - Students at UNM often do not matriculate into their degree programs until after the first year. Consequently, students are enrolling in SSIG sections that do not support their intended majors.
        - Since UNM has no way to automate/require co-enrollment in companion courses, students are often enrolling in SSIGs without also enrolling in the companion course. Consequently these students are not able to connect with the majority of the SSIG curriculum.
        - Many students enroll in SSIGs simply to pick up one credit for financial aid purposes. These students lack motivation to complete coursework.
        - The SSIGs do not count towards any STEM degree requirements and they do not count as core-courses. Consequently, they become low priorities for many students.
        - Since the SSIGs do not have pre-requisites, students are enrolling who do not have the math background to complete coursework.
- **Institutional Research:**
    - Data quality is an issue at UNM. As a result, the institutional researcher spends extra time ensuring the reliability and validity of data before reports are released. To this end, building strong relation-

ships with the Office of Institutional Analytics and the Enrollment Management departments is crucial.

- Cross-University relationships with data people are vital to keep STEM Gateway from becoming a silo. These relationships help us to institutionalize our work, and to ensure that the outcomes of our grant impact the greatest variety and number of departments. Staff put forth considerable effort to support other departments who allow our full access to institutional data. Simply put, data people who provide data access trust data people.