

MSU INVESTMENT PROPOSAL FOR INSTITUTIONAL PRIORITIES

PROPOSAL OVERVIEW

Title	Science Learning Center (SLC)	Request Date	12-16-2011
Department	Physics	Email	smith@physics.montana.edu
Requestor	Dick Smith – Department Head	Phone	994-6152

STRATEGIC ALIGNMENT

<p>Core Themes and Objectives (check all that apply)</p>	<p>Educate Students</p> <p>X Our graduates will have achieved mastery in their major disciplines</p> <p><input type="checkbox"/> Our graduates will become active citizens and leaders</p> <p><input type="checkbox"/> Our graduates will have a multicultural and global perspective</p> <p><input type="checkbox"/> Our graduates will understand the ways that knowledge & art are created and applied in a variety of disciplines</p> <p>X Our graduates are prepared for careers in their field</p> <p><input type="checkbox"/> We will provide increased access to our educational programs</p> <p><input type="checkbox"/> Communities and external stake holders benefit from broadly defined education partnerships with MSU</p> <p>Create Knowledge and Art</p> <p>X Students, faculty, and staff will create knowledge and art that is communicated widely</p> <p>Serve Communities</p> <p>X We help meet a fundamental need of the citizens of Montana by providing degree programs for our students</p> <p>X We help meet the educational needs of the citizens of Montana by providing a wide range of educational opportunities to a variety of students</p> <p>X Our students, faculty, staff, and administrators reach out to engage and serve communities</p> <p>X Our students, faculty, staff, and administrator reach in to build the university community</p> <p>Integrate Learning, Discovery, and Engagement</p> <p>X Each graduate will have had experiences that integrate learning, discovery and engagement</p> <p><input type="checkbox"/> Outreach activities will educate students and address the needs of the communities we serve</p> <p>X Students, faculty, and staff will create knowledge and art that addresses societal needs</p> <p>X MSU is a community that will be characterized by synergy within and across disciplines, roles and functions.</p> <p>Stewardship</p> <p>X The public trusts the institution to operate openly and use resources wisely</p> <p>X The faculty and staff are well-qualified and supported</p> <p><input type="checkbox"/> MSU will support Native American students, programs, and communities</p> <p><input type="checkbox"/> MSU will be an inclusive community, supporting and encouraging diversity</p> <p>X Our publicly provided resources are used efficiently and effectively</p> <p><input type="checkbox"/> Natural resources are used efficiently and sustainably</p> <p><input type="checkbox"/> MSU nurtures a culture of resource conservation and ecological literacy among students, faculty and staff</p> <p><input type="checkbox"/> Our physical infrastructure (e.g., building, equipment, open spaces) will be well-maintained and useful</p>
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INSITUTIONAL BENEFIT						
Campuses	X Bozeman <input type="checkbox"/> Billings <input type="checkbox"/> Havre <input type="checkbox"/> Great Falls <input type="checkbox"/> FSTS <input type="checkbox"/> Extension <input type="checkbox"/> MAES					
Cross Depts	Please List: All departments who require their majors to take science classes will benefit; multiple science departments will buy in and offer help for students taking their classes.					
TIMEFRAME						
Proposed Dates	Start: Fall 2012			End: ongoing		
COST AND REQUIREMENTS						
Funding Type	One-Time (\$)	Multi-Year (\$)			Base (\$)	FTE
		Year 1	Year 2	Year 3		
Personnel (w/benefits)					100,000	1.0
Materials & Supplies	10,119					
Travel						
Contracted Services						
Capital						
Other Operations						
TOTAL	10,119				100,000	1.0

Please comment, if necessary, regarding cost and requirements.

Budget:

The greatest challenge in supporting this proposal is to identify a classroom or other similar size space that could be dedicated to the SLC. A decision would be required at the highest level to sacrifice the classroom space for the potential gains in student success. If success was not obvious after a few years, the decision to create the SLC could be reversed and the space restored to it's previous use. Beyond that, the estimated one-time costs would be quite reasonable, as shown here.

Round (Group) Table	8	\$467.43	\$3,739.44
Chairs (Stacking Guest)	66	\$79.99	\$5,279.34
White Board (4' x 3')	10	\$103.68	\$1,036.80
Bulletin Board (3' x 2')	1	\$63.73	\$63.73
Monitor Desk (Prop. Supply-Free)	1	\$0.00	\$0.00
			<u>\$10,119.31</u>

Depending on the room provided, some carpeting, paint, and lighting upgrades might be needed. This has not been included in the budget to date. Also, to keep costs down we would check with property control for surplus tables and chairs that might serve our purpose. We would look for used computers that become available following department upgrades. Individual departments would have to work with the Dean of CLS to determine how to pay the student tutors. Eventually, we anticipate evolving to a model where the student mentors are supported through the Provost and CLS Dean, ideally through an increment in the base budget, justified by the increased retention numbers. Sources of long-term support that we have considered other than base budget would be to approach ASMSU, and to make use of our emeritus faculty as volunteers who are interested in mentoring students. The minimal staff needs from Physics would be equivalent to 2 GTAs (40 hrs/week) and 50 hrs of student labor @\$10/hr, an estimated total of approximately \$5000/month. This cost, if not available initially through the initiative, would be negotiated with the Dean and department. We have included base salary (\$50,000) for a director of the SLC, and 10 months of support for GTAs and student labor (\$50,000).

PROPOSAL SCOPE

Describe the Proposal

Background: It is the opinion of several faculty in the Physics Department that a large number of students on the MSU campus could greatly improve their chances to learn, flourish and graduate successfully by improving their performance in their physics classes, and more generally in their large enrollment science classes. Most science departments have individual, independently operated help centers distributed around campus for students taking classes in those departments. For example, Physics operates the Physics Help Center in EPS 255 from 8 a.m. to 5 p.m. five days a week. This room has 12-15 seats around two tables in approximately 234 sq. ft. It is staffed on a voluntary basis by physics faculty, graduate and undergraduate students. It serves a student enrollment of approximately 1400 students per semester in astronomy (ASTR110), college physics (PHSX205-7), and engineering physics (220-222-224-240-242). It is frequently overcrowded, with students standing in the hallway waiting for help, and GTAs struggling to maneuver between chairs to reach students needing assistance. We implemented a suggestion box in the current help center during Fall 2011. Of the 5 suggestions turned in, 4 said we need a larger room with more helpers. The 5th said "I just wanted to say how much I appreciate all the TA's help. Never thought I'd understand physics. You are helping me pass this class! Thank you!"

It is especially troubling to us that we have a drop-out rate of nearly 25% in some of the introductory physics classes, e.g. 205, 207. We are looking for ways to help these weaker students make the conceptual connections required to succeed in the course. We asked the students currently taking the classes to provide suggestions. We then polled the classes, using clicker questions, to determine which suggestions had universal support. When the students were asked, "Do you feel it would be helpful if more and a greater variety of example problems were solved in detail on the board in an extra recitation/help session?" nearly 80% responded in the affirmative. The students feel a need for this extra resource.

Proposal: We propose to develop a Science Learning Center (SLC), in a location to be determined, and based on the successful model of the Math Learning Center (MLC) in Wilson Hall. The MLC is widely accepted as helping our students succeed in their math courses. For this purpose we would seek help in locating a single small-classroom-size space, perhaps around 600 sq ft to house the SLC, with 8-10 circular tables each seating up to 8 students, that would encourage small group interactions. Ideally, the SLC would be centrally located on campus, perhaps in AJM Johnson, Reid or Wilson Halls, and staffed by paid students, both graduate and undergraduate as appropriate. The training and selection of these student helpers would be managed by the individual departments using the SLC, e.g. by weekly meetings of instructors and helpers. The space would be outfitted with a bulletin board specifying the times when various tutors for different subjects would be available, similar to the MLC. The room would have white boards available for small group discussions. A small portion of the area would have a few computers for students to review lectures, check class assignments, or ask questions related to D2L or text related homework sites, etc. All the departments participating in the SLC would collaborate to establish staff member(s) and the overall management scheme for providing oversight of SLC services.

In addition to creating the SLC, we propose to create optional recitation sessions for at least the two college physics classes. These sessions would meet twice a week. The sessions would be very structured, with example problems that are similar to the homework worked out in detail at the board. Students would also be taught problem-solving skills, including proportional reasoning and free-body diagrams. These sessions would be entirely optional, but we would encourage the students who are struggling to make time for the help. The person hired as Director of the SLC would coordinate and conduct these recitations sections, further justifying the considerable expense of a full-time professional position.

PROPOSAL SCOPE

Describe the broader impacts and benefits of this proposal

Justification: We believe that creation of a SLC will improve retention in a variety of ways. First and foremost is to provide well-qualified help for more students with a larger space. The report on High-Impact Educational Practices (<http://www.aacu.org/leap/hip.cfm>) points out the benefits of bringing students together into small groups where they work closely with one another. This is the essence of a help center. Students learn from one another as well as from the staff and peer instructors in the room. The best practices mention the value of collaborative learning groups where students learn to solve problems in the company of others, and in this way increase their understanding. The center provides the opportunity for study groups to form and work together. It becomes more than simply “getting the answer”.

ADDITIONAL INFORMATION

Implementation Plan *(Please describe with timelines)*

Timeline: The center could be established as soon as the room becomes available, perhaps in Fall 2012, with furniture and other accessories being added as they are acquired. Each department involved would coordinate its own help services, though only a single Director would be needed for overall coordination. The SLC would become identified as “the place to go” when you need help in a science course.

Assessment Plan *(Please describe with indicators)*

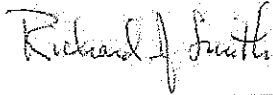
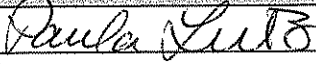
Assessment of Success: Success of the SLC could be assessed most easily by looking at student performance in those courses in which the student clients are enrolled. Perhaps the “DFW list” could serve as the data source. Alternatively, we can simply looking at the percent pass rate, or drop-out rates, before and after the creation of the SLC.

If assessed objectives are not met in the timeframe outlined, what is the plan to sunset this proposal?

Sunset options: We anticipate that student success as a result of the SLC will be evident as early as the end of the first semester of operation. If, however, after two years of operation, the SLC is shown to be of little value to the students, we can close the help center and return it to its prior use as a classroom.

Science Learning Ctr.

Physics

SIGNATURES		
Department Head (please print)	Signature (required)	Date
Richard J. Smith		12/21/2011
Dept Head Priority (please circle one): <u>Very High</u> High Medium Low Very Low		
Dean/Director (please print)	Signature (required)	Date
Paula Lutz		1-3-12
Dean/Director Priority (please circle one): <u>Very High</u> High Medium Low Very Low		
Executive/VP (please print)	Signatures (required)	Date
Executive/VP Priority (please circle one): Very High High Medium Low Very Low		