

MSU INVESTMENT PROPOSAL FOR INSTITUTIONAL PRIORITIES

PROPOSAL OVERVIEW

Title	Statistical Consulting Center Director and Graduate Assistant	Request Date	12/11/2011
Department	Mathematical Sciences	Email	greenwood@math.montana.edu
Requestor	Mark Greenwood	Phone	406-994-1962

STRATEGIC ALIGNMENT

<p>Core Themes and Objectives (check all that apply)</p>	<p>Educate Students</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Our graduates will have achieved mastery in their major disciplines <input checked="" type="checkbox"/> Our graduates will become active citizens and leaders <input type="checkbox"/> Our graduates will have a multicultural and global perspective <input checked="" type="checkbox"/> Our graduates will understand the ways that knowledge & art are created and applied in a variety of disciplines <input checked="" type="checkbox"/> Our graduates are prepared for careers in their field <input type="checkbox"/> We will provide increased access to our educational programs <input checked="" type="checkbox"/> Communities and external stake holders benefit from broadly defined education partnerships with MSU <p>Create Knowledge and Art</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Students, faculty, and staff will create knowledge and art that is communicated widely <p>Serve Communities</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> We help meet a fundamental need of the citizens of Montana by providing degree programs for our students <input type="checkbox"/> We help meet the educational needs of the citizens of Montana by providing a wide range of educational opportunities to a variety of students <input checked="" type="checkbox"/> Our students, faculty, staff, and administrators reach out to engage and serve communities <input checked="" type="checkbox"/> Our students, faculty, staff, and administrator reach in to build the university community <p>Integrate Learning, Discovery, and Engagement</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Each graduate will have had experiences that integrate learning, discovery and engagement <input type="checkbox"/> Outreach activities will educate students and address the needs of the communities we serve <input checked="" type="checkbox"/> Students, faculty, and staff will create knowledge and art that addresses societal needs <input checked="" type="checkbox"/> MSU is a community that will be characterized by synergy within and across disciplines, roles and functions. <p>Stewardship</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> The public trusts the institution to operate openly and use resources wisely <input checked="" type="checkbox"/> The faculty and staff are well-qualified and supported <input type="checkbox"/> MSU will support Native American students, programs, and communities <input type="checkbox"/> MSU will be an inclusive community, supporting and encouraging diversity <input checked="" type="checkbox"/> Our publicly provided resources are used efficiently and effectively <input type="checkbox"/> Natural resources are used efficiently and sustainably <input type="checkbox"/> MSU nurtures a culture of resource conservation and ecological literacy among students, faculty and staff <input checked="" type="checkbox"/> Our physical infrastructure (e.g., building, equipment, open spaces) will be well-maintained and useful
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PROPOSAL SCOPE

Describe the Proposal

Despite its stature as a top tier research university, MSU does not provide adequate statistical consulting to its researchers. This sort of service is available at nearly every other institution at this level. Statistical consulting includes help with study design, selection of appropriate statistical methods, and interpretation of statistical results. Consulting with a statistician “early and often” can prevent researchers from wasting time and money on a study which will not be able to satisfy its objectives. Research at all levels suffers from the deficiency of resources to enhance and expedite the statistical components of research. Researchers are expected to use and report increasingly sophisticated statistical methods in order to compete for funding and publication, which is increasing the need for collaboration with statisticians in all phases of research. We are seeing graduate students in many disciplines being asked to understand and run extremely complex statistical models without a clear understanding of how the methods work or of possible shortcomings and pitfalls. Each of our six statistics faculty members does collaborate with other MSU researchers, yet requests for help exceed our resources. We currently provide some assistance to researchers through our Statistical Consulting Seminar but this course is mainly focused on training our graduate students to do consulting and the number of clients is limited by the number of students in the class. This course is currently being taught by Dr. Kathryn Irvine, an affiliate faculty member, who is a statistician at the USGS Northern Rocky Mountain Science Center.

We propose to hire and temporarily fund a non-tenure track Ph.D. statistician dedicated to providing statistical consulting to researchers across all of the MSU campuses. The funding would start at 1.0 FTE for the first two years, followed by 0.75 FTE funding due to the expectation that the director will secure funding through extramural or intramural grants after establishing relationships with researchers on campus. The director would not be expected to fully fund their position through collaborations on specific grants, as this would limit the availability of resources for newer researchers, research being performed without full funding, and those that did not have the foresight to include statistical consulting in their original grant proposal. Undergraduate and graduate researchers are often on the front lines of performing statistical analyses with little training or support and no funds for getting assistance on their projects. This funding would inject additional resources into research projects across campus at the undergraduate, graduate, and faculty levels.

A graduate research assistant (\$20,000/year) would be funded to assist the director in meeting with clients, assessing needs, and assisting in the consultations. The student would help with running the consulting seminar and would deal with clients with minor consulting needs under the direction of the center director. The student would be expected to work 20 hours per week in this position for the academic year (9 month appointment).

Basic statistical consulting services would be free to researchers affiliated with MSU. More detailed and time consuming consultation and data analysis services would be negotiated based on the client’s ability to pay for that additional assistance. Clients from outside MSU would be charged based on the complexity of the problem and services required, with the initial consultation meeting free. All researchers would be encouraged to compensate the consulting center in some fashion, whether in the form of publication credit, financial remuneration, or inclusion in future proposals.

We anticipate that the new resources requested herein will not meet demand if researchers in need were to fully utilize the services. The director will be required to make decisions to provide the greatest utility of services to researchers requesting assistance. Additional requests will be cataloged and attempts made to identify further assistance will be made.

MSU affiliated research institutes and centers such as the Western Transportation Institute, Thermal Biology Institute, Center for Biofilm Engineering, Montana Water Center, Center for Computational Biology and the new Montana Institute on Ecosystems will also benefit from the presence of a walk-in Statistics Consulting Center.

The Department of Mathematical Sciences will provide office space for consultant and graduate assistant as well as a room for meetings with clients, access to computer server and to statistics faculty colleagues for support and help with more challenging problems.

Responsibilities of the Director:

- Possibly teach (or co-teach with a statistics faculty member) the statistical consulting seminar
- Manage and coordinate consulting requests throughout the year (including summer)
- Provide consulting for projects beyond the statistical consulting seminar
- Pursue extramural and intramural funding for more in depth collaborative projects and pursue partial direct funding of position from colleges and departments using the service
- Integrate advanced undergraduate statistics students into the consulting process where possible, especially as it relates to requests from undergraduate researchers involved in USP projects
- Enhance the visibility of statistical consulting availability
- Serve on graduate student committees when possible for students whose research has been aided by consulting process (up to 5% of FTE)

Responsibilities of the graduate assistant:

- Assist in teaching the statistical consulting seminar
- Assist in managing and coordinating consulting requests during semesters
- Provide consulting for projects beyond those served by the statistical consulting seminar, especially undergraduate research projects

PROPOSAL SCOPE

Describe the broader impacts and benefits of this proposal

The direct benefits of the expanded consulting services would be:

- Higher quality, more efficient research across MSU.
- A single point of contact for MSU researchers needing statistical advice which is available year round to match researchers' needs for a collaborator with the requisite statistical skills and expertise.
- Increased consulting for graduate students in other departments related to their thesis or dissertation research.
- Consulting for undergraduate research projects.

More specific impacts to various groups on campus will be:

- Researchers across MSU campuses would benefit by having a more efficient research process through access to statistical consulting. They would have the potential for stronger grant submissions that could include things like power analyses and inclusion of funding for advanced statistical consulting in their proposals. Access to statistical consulting can also improve the chance of publication of their research.
- Departments around campus could more easily recruit and retain faculty members by having institutional support for statistical consulting services. Candidates could meet with the consulting center director as part of their campus visits to have direct contacts with the center from the moment they take a position at MSU.
- The community would benefit in general by having access to fee-based services which currently are not available. Many businesses and non-profit organizations also have statistical needs and could be served when resources are available.
- Graduate statistics students would benefit by an enhanced education in seeing more consulting projects or by being able to work on projects better suited to their expertise as the director can choose from more projects for the seminar course. In doing statistical consultation, they get to collaborate on research projects, see benefits of the advanced statistical methods they are working on, learn how to provide statistical advice, and become collaborators on research projects.
- Graduate students in other departments would benefit by being able to gain more timely access to consulting, to speed up the process of being prepared for defenses, as well as preparation of manuscripts based on the research. Utilization of the consulting services before collecting data may improve study design and eventual analysis, as well as giving the students a stronger foundation in research methods and statistical inference to aid in their future careers.
- Undergraduate statistics students would benefit from inclusion in the consulting process by seeing the benefits of the methods they are learning and seeing how many areas statistical inference can be used in. This could help them in selecting future avenues of study and employment. It also could lead to undergraduate research projects where they work on statistical methods to aid other undergraduate researchers on their research projects.
- Undergraduate students in other departments would benefit from access to consulting for their research projects. They typically need more on-demand consulting for their projects because they happen so quickly and our current model provides them basically no access to advice. The access to consulting services would allow them to complete better research projects and also become better prepared for graduate-level research by being prepared to work with statisticians. Colin Shaw, director of the Undergraduate Scholars Program, enthusiastically supports the resources available for undergraduates doing research and would encourage students doing quantitative research to take advantage of this service.

ADDITIONAL INFORMATION

Implementation Plan *(Please describe with timelines)*

Spring 2012: National search for director position.

Spring 2012: Interview current graduate students for graduate assistant position.

Spring 2012: Current faculty provide informational seminar for departments about consulting center services that will be available.

Fall 2012: Director begins taking clients for 2012/2013 consultations.

Fall 2012: Director begins giving informational seminars about consulting center services available and creating enhanced web presences for consulting center.

If the funds are available at a later date, the timeline could easily be delayed with consulting services commencing upon start date of director.

Assessment Plan *(Please describe with indicators)*

Success of the consulting center will be judged based on:

- Number of clients served,
- Satisfaction of clients,
- Number of undergraduate and graduate students that get consulting experience,
- Degrees and research projects completed with help of the center, and
- Publications and grants obtained by clients of the center.

In order to assess these outcomes, each client will be asked to complete a survey of services provided. The survey will obtain information about the interactions and expected outcomes of the research. Surveys will be used to perform annual evaluations of director, graduate student assistant, and center in general.

In later years, success of the center will also be judged by success in obtaining extramural and intramural funds in order to partially fund the director position.

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

In Year 3, a report will be prepared by the Statistics faculty to assess the success of the center. If the report demonstrates sufficient success of the center in providing benefits to the university, continued funding may be requested from sources including .university affiliated research centers or IDCs at the university, college, or department levels after Year 3, buying continued access to the services if these units find them useful for their researchers. If general funding is not provided, the director could directly fund his/her position from grants but since his/her FTE would be tied to specific projects, however this model would be expected to drastically reduce services to other researchers (particularly new researchers and students). Additional fees may also have to be implemented to fund the position and possibly the graduate assistant. The Department of Mathematical Sciences would continue to provide offices and limited administrative support for the director past Year 3.

Statistical Consulting Ctr. Director & Grad. Assit

Math Sciences

SIGNATURES		
Department Head (please print)	Signature (required)	Date
Kenneth L. Bowers	Kenneth L. Bowers	12/16/11
Dept Head Priority (please circle one): <input checked="" type="radio"/> Very High <input type="radio"/> High <input type="radio"/> Medium <input type="radio"/> Low <input type="radio"/> Very Low		
Dean/Director (please print)	Signature (required)	Date
Paula Lutz	Paula Lutz	1-3-12
Dean/Director Priority (please circle one): <input type="radio"/> Very High <input type="radio"/> High <input checked="" type="radio"/> Medium <input type="radio"/> Low <input type="radio"/> Very Low		
Executive/VP (please print)	Signatures (required)	Date
Executive/VP Priority (please circle one): <input type="radio"/> Very High <input type="radio"/> High <input type="radio"/> Medium <input type="radio"/> Low <input type="radio"/> Very Low		