TAB	DESCRIPTION	ACTION
1	IDAHO STATE UNIVERSITY – PH.D. IN GEOSCIENCES PROPOSAL	Approval Item
2	IDAHO STATE UNIVERSITY – PH.D. IN SOCIAL AND ENVIRONMENTAL DYNAMICS	Approval item
3	BOISE STATE UNIVERSITY – ONLINE MBA PROGRAM	Approval Item
4	BOARD POLICY III.V. STATEWIDE ARTICULATION AND ASSOCIATE DEGREE AND BOARD POLICY III.N. PRIVATE, IN-STATE, OUT-OF-STATE - SECOND READING	Approval Item
5	BOARD POLICY III.AA. IDAHO RURAL PHYSICIAN INCENTIVE PROGRAM - SECOND READING	Approval Item
6	BOARD POLICY III.AB. ACCOUNTABILITY OVERSIGHT COMMITTEE - SECOND READING	Approval Item

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## IDAHO STATE UNIVERSITY

## SUBJECT

Approval of Proposal for a new Ph.D. in Geosciences and Memorandum of Agreement for Graduate Education in Geosciences

## APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.G. 4 and 5 and Section III.Z.

## **BACKGROUND/DISCUSSION**

Idaho State University (ISU) proposes to create a new Doctor of Philosophy (Ph.D.) in Geosciences to be administered by the Department of Geosciences. This department has increased its research and graduate education profile during the past two decades, and the doctoral program is a logical and necessary step to continue that evolution. The new Ph.D. curriculum will consist of 84 graduate credits, or 54 credits for candidates holding an M.S. degree. Ph.D. students will be recruited from the existing M.S. program, from the local workforce, and across the country thus attracting a more highly qualified workforce to fill natural resource industry jobs in Idaho.

The doctoral program will leverage existing departmental strengths in Idaho's natural resources, water supply, and environmental needs, expanding ongoing projects such as water supply and water quality, semi-arid soil and vegetation recovery after wildfires, assessment of active geologic faults, landscape change and associated topographic analyses, fluvial processes, geothermal and volcanological research, and geospatial modeling and software development. The doctoral program will also enhance the department's proven ability to attract research funding from federal agencies and private industry. For instance, some educational grant programs (e.g., NSF Integrative Graduate Education and Research Traineeship (IGERT)) specifically target training of Ph.D. students. The long-term integration of biological and geological research and instruction makes ISU a strong candidate for an IGERT program, but Geosciences must have a doctoral program for that to be possible.

ISU facilitated discussions with Boise State University (BSU) and the University of Idaho (UI) in an effort to promote collaboration between and among the universities who currently offer a Ph.D. in Geosciences. A draft Memorandum of Agreement was crafted based on those discussions.

## IMPACT

Ph.D. student stipends and the students' associated research costs (travel, materials & supplies) will be funded externally. These funds will come from primarily federal sources, but also private and to a limited degree, state sources.

Funding is expected to be sustained over the long term, based on the twentyyear record of sustained grant success by existing faculty in ISU Geosciences.

State Appropriation currently pays approximately 95% of the salaries of ISU Geosciences professors and support staff. These professors and staff will direct the Ph.D. program. State appropriations also pay for Geosciences library resources and for the infrastructure (office and laboratory space) that houses the Ph.D. students. All of these state-funded resources are sufficient to support the new Ph.D. program.

The proposed MOA between the Departments of Geoscience at ISU, BSU, and UI outlines how they will work collaboratively to support a common vision and understanding of graduate geoscience education in Idaho and commit to working together to provide statewide access to quality graduate geoscience education. A summary of terms include the following:

- working in concert to develop and maintain geoscience graduate programs that make use of existing disciplinary strengths while minimizing duplication of resources;
- developing geoscience graduate courses to share among institutions;
- developing agreements addressing administrative matters as common curricula are developed, which may include, but will not be limited to, tuition, workload adjustment allocation, transfer credit, and other issues related to enrolled students or collaborative courses among institutions;
- making good faith efforts to secure at their respective institutions graduate faculty status for the graduate geoscience faculty of all three institutions and sharing faculty across the institutions to enhance availability of and access to faculty experts for teaching and research;
- awarding Ph.D. degrees independently through their respective programs while collaborating, as specified in the agreement to avoid duplication and facilitate efficient use of resources; and
- working jointly among respective administrators, staff, and faculty in good faith to address issues that may arise in the implementation of the agreement.

# ATTACHMENTS

Attachment 1 – Proposal for Ph.D. in Geosciences and external reviewPage 5Attachment 2 – Memorandum of Agreement between ISU, BSU and UIPage 45Attachment 3 – Letter of Support from Idaho Department of CommercePage 47

## INSTRUCTION, RESEARCH, AND STUDENT AFFAIRS DECEMBER 13, 2012

## STAFF COMMENTS AND RECOMMENDATIONS

Idaho State University (ISU) proposes to create a new Doctor of Philosophy (Ph.D.) in Geosciences that will be delivered through three of ISU's Geosciences facilities: ISU Physical Sciences in Pocatello, CAES in Idaho Falls, and Boise Center Aerospace Laboratory in Boise. ISU projects that they have the capacity to enroll approximately 8 students in the doctorate program if approved.

Consistent with Board Policy III.G., ISU's proposed Ph.D. in Geosciences program was reviewed on by an external review panel consisting of Dr. Gina Tempel, University of Nevada, Reno and Dr. Wanda Taylor, University of Nevada, Las Vegas. Reviewers provided positive and supportive reviews to include their recommendation for establishing the Ph.D. program at ISU. When addressing issue of duplication, the team emphasized the "complementary aspect of the ISU program over any competitive aspects" and noted that the addition of new ISU faculty benefits collaboration with BSU and UI. The team also indicated that the expertise of ISU faculty is different in geoscience expertise and focus than faculty at BSU and UI.

The proposal went through the program review process and was presented to the Council on Academic Affairs and Programs CAAP) on May 3, 2012. CAAP was divided on whether to recommend Board approval given the outstanding concerns expressed by the UI with regard to overlap with existing doctorate geoscience programs. CAAP encouraged ISU to have further discussion regarding potential collaboration. ISU facilitated discussions with the UI and BSU and crafted a Memorandum of Understanding that outlines how they can work collaboratively to support graduate geoscience education in the state. Board staff recommended that the universities encourage their faculty to reach out to the Department of Commerce with the purpose of discussing how institutions can collaborate and partner in what the state is trying to accomplish with the identified industry clusters.

ISU's request to create a new Ph.D. in Geosciences is consistent with their Five-Year Plan for the delivery of academic programs in the Southeast region. Pursuant to III.Z, no institution has the Statewide Program Responsibility for Geosciences. Currently, Boise State University offers a Ph.D. in Geosciences and a Ph.D. in Geophysics in Boise. The University of Idaho offers a Ph.D. in Geology in Moscow and Idaho Falls. The following represents programs in geosciences and geology currently being offered:

Institution	Region	Branch Campus	Location	Program	Degree
NIC	1	NIC Campus	Coeur D'Alene	Geology	AS
UI	2	UI Campus	Moscow	Geol-Structural Geology & Tectonics Opt.	BS
UI	2	UI Campus	Moscow	Geol-Environmental Geology Opt.	BS
UI	2	UI Campus	Moscow	Geol-General Geology Opt.	BS
UI	2	UI Campus	Moscow	Geol-Geological Education Opt.	BS
UI	2	UI Campus	Moscow	Geol-Hydrogeology Opt.	BS
UI	2	UI Campus	Moscow	Geol-Resource Exploration Opt.	BS
UI	2	UI Campus	Moscow	Geology	MS

# INSTRUCTION, RESEARCH, AND STUDENT AFFAIRS DECEMBER 13, 2012

Institution	Region	Branch Campus	Location	Program	Degree
UI	2	UI Campus	Moscow	Geology	PhD
CWI	3	Caldwell, Nampa	Caldwell, Nampa	Geology	AS
ISU	3	ISU-Meridian Ctr	Meridian	Geophysics/Hydrology	MS
BSU	3	BSU Campus	Boise	Geology	MS
BSU	3	BSU Campus	Boise	Geophysics	BS, MS, Ph.D.
BSU	3	BSU Campus	Boise	Geosciences	BS, Ph.D.
BSU	3	BSU Campus	Boise	Geosciences Joint/ISU	MS
CSI	4	CSI Campus	Twin Falls	Geology	AS
ISU	5	ISU Campus	Pocatello	Geology	MNS, AS, BA, BS, MS
ISU	5	ISU Campus	Pocatello	Geological Sciences	MS
ISU	5	ISU Campus	Pocatello	Geophysics/Hydrology	MS
ISU	6	University Place	Idaho Falls	Geology	AS
UI	6	University Place	Idaho Falls	Geology	PhD

Board staff and CAAP recommend approval as presented.

## **BOARD ACTION**

I move to approve the request by Idaho State University to offer a new Ph.D., in Geosciences.

Moved by \_\_\_\_\_ Seconded by \_\_\_\_\_ Carried Yes \_\_\_\_\_ No \_\_\_\_

I move to approve the Memorandum of Understanding between Idaho State University, Boise State University, and the University of Idaho as presented, in substantial conformance to the form submitted as attachment 2 with the effective date of the Memorandum of Understanding changed to December 13, 2012.

Moved by \_\_\_\_\_ Seconded by \_\_\_\_\_ Carried Yes \_\_\_\_\_ No \_\_\_\_

2009-01

Institution Tracking No.

# IDAHO STATE BOARD OF EDUCATION ACADEMIC/PROFESSIONAL-TECHNICAL EDUCATION FULL PROPOSAL

Submitted by:

Idaho State University

Institution Submitting Proposal

College of Science and Engineering

Department of Geosciences

Name of College, School, or Division

Name of Department(s) or Area(s)

A New, Expanded, or Off-Campus Instructional Program Leading to:

PhD in Geosciences 40.06

Degree/Certificate & 2010 CIP

Program Change, Off-Campus Component

Fall 2013/ps

Proposed Starting Date

This proposal has been reviewed and approved by:

College Dean (Institution) Fiscal Officer (Institution) Office Date President Date

Switchi

VP Research and/or Graduate Dean

Chief Academic Officer (OSBE)

Date

SBOE/OSBE Approval

Date

## Before completing this form, refer to "Board Policy Section III.G. Program Approval and Discontinuance.

1. Describe the **nature of the request**. For example, is this a request for a new on-campus program? Is this request for the expansion or extension of an existing program, or a new cooperative effort with another institution or business/industry or a contracted program costing greater than \$250,000 per year? Is this program to be delivered off-campus or at a new branch campus? Attach any formal agreements established for cooperative efforts, including those with contracting party(ies). Is this request a substantive change as defined by the NWASC criteria?

This proposal is for a new Doctor of Philosophy (PhD) degree program to be administered by the Department of Geosciences, which is an academic unit within the College of Science and Engineering at Idaho State University. This degree program has been included in the Idaho State Board of Education's Eight Year plan, with an implementation date of 2010-2011. This is a new program, not an expansion or extension of an existing program. The program will be delivered and the degree awarded by ISU-Pocatello at the three ISU Geosciences facilities: ISU Physical Sciences (Pocatello), CAES (Idaho Falls), and BCAL (Boise). With appropriate SBOE approvals, it would be possible to start this program in Fall semester of 2012, as all program components are already in place within the Department of Geosciences.

With 10 faculty, 40 graduate students, a robust curriculum and research funding already in place, the Department of Geosciences is ready to offer a PhD in Geosciences. The addition of a PhD in Geosciences is necessary for faculty retention, to conduct research of increased depth and scope, and to attract additional students. The addition of a PhD program will attract additional students from within and beyond Idaho and allow us to pursue external funding sources that heretofore have been closed to us. We plan to leverage our existing federal funding for PhD students (in the Engineering and Applied Sciences Program), strong track record in grant awards, and several newly awarded federal, state, and private grants to support the PhD in Geosciences, thereby requesting no additional support for the program.

2. Quality – this section must clearly describe how this institution will ensure a high quality program. It is significant that the accrediting agencies and learned societies which would be concerned with the particular program herein proposed be named. Provide the basic criteria for accreditation and how your program has been developed in accordance with these criteria. Attach a copy of the current accreditation standards published by the accrediting agency.

National or international accreditation programs do not exist for Geosciences. There are several national/international geoscience societies (Geological Society of America, American Geophysical Union, American Institute of Professional Geologists) but they do not provide guidelines for university curricula. Nevertheless, Geoscience departments in America have adopted a fairly standard sequence of courses and minimum requirements for each degree program. We have used these standards to devise the PhD curriculum described in section A (below) and Attachment 2.

An external peer-review of this proposed degree program was conducted by Dr. Gina Temple of University Nevada, Reno and Dr. Wanda Taylor of University Nevada, Las Vegas. Their report, which addresses initial program quality, is provided as Attachment 1.

After implementing this program, quality will be ensured through internal review, the university outcomes assessment process, student evaluations, and external review where feasible. As is standard within the field, the committee of faculty members specific to each student will be responsible for maintaining the standard of excellence and rigor typical of doctorate degrees. Internal review will consist of ongoing evaluation of program strengths and weaknesses and instituting modifications where needed. The outcomes assessment program will be conducted by the Department of Geosciences, with guidance from the ISU Office of Institutional Research and Office of Academic Affairs, and will consist of the usual course evaluations as well as exit interviews, student surveys, alumni surveys, and employer surveys. Student productivity will be measured by counting their peer-reviewed publications, grant awards, and courses taught or assisted. Using the assessment results and data concerning trends in the Geosciences, the program will be reviewed every three years and modifications introduced as needed. If significant issues arise, an external reviewer will be invited to provide expert advice.

a. *Curriculum – describe the listing of new course(s), current course(s), credit hours per semester, and total credits to be included in the proposed program.* 

Attachment 2 provides a complete description of the curriculum as it would appear in the ISU Graduate Catalog. For entering students with an appropriate MS degree (geosciences or closely related field), the new PhD curriculum will consist of 54 credits including a maximum of 22 credits of graduate level coursework relevant to the research focus and a minimum of 32 credits of dissertation (Geol 8850). Two to four of the graduate credits will be a recurring graduate seminar. Students not possessing an M.S. degree must earn an additional 30 graduate credits (for a total of 84 credits

applied to the PhD degree). Of these 30 credits, at least 17 credits-must be at the 600 level in Geosciences while 13 credits (including up to 8 from a related discipline) can be at the 500 or 600 level.

The 54 credit requirement parallels that of the existing ISU Engineering and Applied Science doctoral program. A typical PhD student who possesses a MS degree would enroll in 9 credits per semester as full time graduate students and complete their degree in 3 years.

Since this degree is research-intensive and requires a maximum of 22 classroom credits, existing graduate courses offered by ISU Geosciences are more than sufficient to support the PhD program. These courses are listed and described in Attachment 2.

b. Faculty – include the names of full-time faculty as well as adjunct/affiliate faculty involved in the program. Also, give the names, highest degree, rank and specialty. In addition, indicate what percent of an FTE position each faculty will be assigned to the program. Are new faculty required? If so, explain the rationale including qualifications.

No new faculty are required for the implementation of this program. Note we have added 2 new faculty positions to our department in FY12. These positions have a strong focus on PhD level research. Attachment 3 provides a list of current faculty, their research areas, and peer-reviewed publications during the past decade. Affiliate Faculty are also listed. Departmental faculty have generated  $\sim$ 350 publications since 2000, an average production rate of 2.5 peer-reviewed publications per faculty member per year. This is a significant measure of the quality of faculty available to supervise PhD students and their associated research projects.

The FTE percentage associated with this degree is not listed for each faculty member, since this will fluctuate according to other job demands as well as variations in the availability of external funding and qualified students. However, we expect that on average, 10-20% of a FTE per faculty member will be contributed to the PhD program. We also expect our graduate program director to contribute 10% of his/her time to the PhD program.

c. Student – briefly describe the students who would be matriculating into this program.

The typical matriculating student will possess a MS degree in geosciences or closely related field. Highly motivated BS students will also be considered. Our MS programs (Geology and Geographic Information Science) currently attract 15-20 students from across the country each year and we anticipate the PhD program will similarly draw from other states. In addition, we expect some of our best MS students to continue in the PhD program. Finally, we expect to attract students employed by nearby industries, notably the Idaho National Laboratory. They have provided a continuous flow of graduate students during the past 20+ years, including a number of PhD students who pursued a Geoscience emphasis in ISU's Engineering and Applied Science PhD program.

*d.* Infrastructure support – clearly document the staff support, teaching assistance, graduate students, library, equipment and instruments employed to ensure program success.

No new infrastructure is requested to institute the PhD program. Existing infrastructure includes:

Staff: 1 FTE Financial Technician, 1 FTE Office Specialist 2, 0.5 FTE work-study office assistant, 1.5 FTE IT technicians. Teaching assistance: 2.5 FTE Geoscience instructors (funding provided annually by College).

Graduate students: ~6 resident PhD (Engineering & Applied Science) and ~35 resident MS (GIS, Geology) students.

Teaching Assistantships: 5 permanent and ~2 temporary state-appropriated TAs. Traditionally reserved for MS students. Research Assistantships: ~30 RAs funded by external grants and contracts.

Library: Traditional State University library. Provides online or hard-copy access to ~260 Geoscience journals and serves as government repository for US Geological Survey. Provides Interlibrary Ioan and Web of Science services. Facilities (All have been constructed or renovated in the past 12 years):

- Pocatello campus: ~25,000 ft<sup>2</sup> of space for offices, classrooms, teaching labs, research labs, and storage. Shared use of large lecture hall (250 seats) and GIS Training & Research Center.
- Idaho Falls campus:  $\sim 600 \text{ ft}^2$  of space for offices in Center for Advanced Energy Studies (CAES). Shared use of all research labs and conference rooms in CAES. Shared use of 40-seat classroom in Center for Higher Education.
- Boise campus:  $\sim$ 2000 ft<sup>2</sup> of space for offices and classroom/research lab in Boise Center Aerospace Laboratory (BCAL).

Lost River Field Station (20 miles north of Mackay, ID): 5 acre lot with field station comprising kitchen, large workspace, computer lab, and bathrooms. Full utilities.

Laboratories and Equipment: Departmental labs and equipment are listed in Attachment 4.

e. Future plans – discuss future plans for the expansion or off-campus delivery of the proposed program.

We have no plans to expand the program beyond what is proposed in this NOI. The PhD program as proposed will have students dominantly residing on the Pocatello campus, where 8 of 10 full-time Geoscience faculty reside. Other PhD students may be advised in Boise or Idaho Falls by the individual faculty who work in those locations. Our program already makes extensive use of distance learning (DL) and web-conferencing technology to transmit classes, seminars, graduate student meetings, and conference calls to all three locations, fostering strong collaboration within the department. In addition, we already use a variety of technologies to communicate regularly with Geoscience faculty at BSU and UI, and we plan to continue this collaboration.

3. Duplication – if this program is unique to the state system of higher education, a statement to that fact is needed. However, if the program is a duplication of an existing program in the system, documentation supporting the initiation of such a program must be clearly stated along with evidence of the reason(s) for the necessary duplication.

Describe the extent to which similar programs are offered in Idaho, the Pacific Northwest and states bordering Idaho. How similar or dissimilar are these programs to the program herein proposed?

The proposed degree, though similar in title to degrees at BSU and UI, will be unique to the state because the PhD research will reflect the unique specialties of the ISU Geoscience faculty. Pertinent examples of unique ISU research include:

(1) remote sensing analysis of landscape change including landslides and post-wildfire erosion;

- (2) development of open-source GIS software and its use for watershed modeling;
- (3) provenance study of sedimentary rocks using detrital zircons;
- (4) volcanology of the eastern Snake River Plain as an analogue for the exploration of Mars.

In addition to these examples of individual specialties, ISU Geoscience faculty collaborate extensively to form integrated multidisciplinary research teams that are unique to Idaho. They study such topics as:

- (5) fault and volcanic hazards of eastern Idaho
- (6) stratigraphic architecture of the eastern Snake River Plain aquifer.

Boise State University offers a PhD in Geosciences and a PhD in Geophysics, both in Boise. University of Idaho offers a PhD in Geology in Moscow (see table below). All states that border Idaho similarly contain major universities that offer doctoral programs in Geoscience disciplines. All other colleges and institutes in Idaho (e.g. CSI, CWI, LCSC, NIC) offer AS degrees in Geology.

The value, need, and uniqueness of these studies in Idaho are recognized by our peer departments at BSU and UI. We have strong research collaborations with BSU Department of Geosciences and several programs housed at UI, including Center for Ecohydraulics, Idaho Water Resources Research Institute, Idaho EPSCoR, and Idaho Space Grant Consortium. We also have faculty who work closely with UI and BSU at the Center for Advanced Energy Studies (CAES).

Further evidence that the proposed degree does not duplicate an existing program is provided by the geographic location of most research projects. The ISU Geosciences program is strongly field-oriented with most projects focused on the geology, landscape, and water resources of the southeastern third of Idaho (south of the Salmon River and east of Mountain Home, Ketchum, and Stanley). While a few projects directed by BSU and UI professors also take place in this region, most of the academic geoscience studies are completed by ISU researchers. Adding this PhD program will yield a sharp increase in knowledge of geologic resources and hazards in the State that would not happen otherwise.

Enrollment and Graduates (i.e., number of majors or other relevant data) By Institution for the Proposed Program Last three years beginning with the current year and the 2 previous years

Institution	Relevant Enro	ollment Data		Number of Graduates			
	Current	Previous	Previous	Current	Previous	Previous	
		Year	Year		Year	Year	
BSU	8	6	4	1	0	0	
	Geosciences	Geosciences	Geosciences	Geosciences	Geosciences	Geosciences	
	9	7	8	(Program	(Program	(Program	
	Geophysics	Geophysics	Geophysics	began in	began in	began in	
				Fall 2007);	Fall 2007);	Fall 2007);	
				0	1	2	
				Geophysics	Geophysics	Geophysics	
CSI	NA	NA	NA	NA	NA	NA	
CWI	NA	NA	NA	NA	NA	NA	
EITC	NA	NA	NA	NA	NA	NA	
ISU	Estimate if	Estimate if	Estimate if	Estimate if	Estimate if	Estimate if	
	program in	program in	program in	program in	program in	program in	
	existence	existence	existence	existence	existence	existence	
	6	8	10	6	8	10	
LCSC	NA	NA	NA	NA	NA	NA	
NIC	NA	NA	NA	NA	NA	NA	
UI	9	9	9	2	1	2	

4. **Centrality** – documentation ensuring that program is consistent with the Board's policy on role and mission is required. In addition, describe how the proposed program relates to the Board's current Statewide Plan for Higher Education as well as the institution's long-range plan.

The PhD in Geosciences will support ISU's mission, guided by the SBOE-assigned mission. From the SBOE and ISU's Roadmap for Success Summary 2008-2012, ISU's mission is described - "As a regional public Doctoral/Research University, ISU meets the needs of a diverse population with certificate, associate, baccalaureate, master's and doctoral degree offerings....ISU is the state's lead institution for education in the health professions and related biological and physical sciences....ISU is committed to maintaining strong arts and sciences programs as independent, multifaceted fields of inquiry and as the basis of other academic disciplines...."

GIS and remote sensing are two of several research foci in the Department of Geosciences. These fields are directly applicable to the health sciences (e.g., GIS analysis of infectious disease; medical imaging). While the Geosciences PhD program has not directly focused research efforts in the health sciences, expertise and collaboration with health sciences faculty could provide future opportunities for ISU, as the SBOE designated "state lead institution for education in the health professions."

This proposal aligns with several portions of ISU's strategic plan (http://www.isu.edu/acadaff/strategicplan/index.shtml):

Goal 1. Achieve academic excellence in undergraduate, graduate, professional, and technical education. This proposal will enhance ISU's academic excellence in graduate education, and will enhance undergraduate education through faculty retention, improved facilities, and undergraduate research opportunities associated with doctoral research.

Goal 2. Increase the University's research profile to strengthen our institutional curricula and ability to meet societal needs through the creation of new knowledge. A Geoscience doctoral program will enhance the university's research profile through enhanced funding opportunities, increased potential for higher level research, and more widely recognized alumni in academic, government, and industrial positions.

Goal 4. *Prepare students to function in a global society.* The Geosciences doctoral program will increase opportunities for international research collaboration, with faculty and students working internationally and attracting international researchers to ISU.

Goal 5. Focus institutional instructional and research expertise on community and societal needs throughout the state, region, nation, and world. Because of direct linkages to natural resource use and improvement, Geosciences instruction and research naturally focuses on community and societal needs at all levels.

- 5. **Demand** address student, regional and statewide needs.
  - a. Summarize the needs assessment that was conducted to justify the proposal. The needs assessment should address the following: statement of the problem/concern; the assessment team/the assessment plan (goals, strategies, timelines); planning data collection; implementing date collection; dissemination of assessment results; program design and on-going assessment. (See Board policy III.X., Outcomes Assessment.)

**Workforce needs (national, state):** Students who obtain their PhD in Geosciences are employed by universities, petroleum companies, large environmental firms, mining companies, and government and private research facilities. Universities and national laboratories are the largest potential employers. Oil and precious metal prices are currently at all-time highs, leading these industries to expand their operations and seek additional resources through the employment of geoscientists. According to the article "In the Geosciences, Business is Booming" in Science (August, 2008) the number of jobs available in the petroleum, mining and environmental consulting industries will grow by 22% from 2006 to 2016, compared to a projected 10% increase for all other occupations (US Bureau of Labor Statistics).

According to statistics provided by the State of Idaho, Idaho Department of Labor, Labor Market Information, our PhD in Geosciences will serve an extremely high-demand need for the Idaho workforce. In fact, long-term projections (<u>http://lmi.idaho.gov/Occupations/LongTermProjections/tabid/815/Default.aspx</u>) indicate that Postsecondary Teachers (SOC Code 25-1199) are listed 3<sup>rd</sup> in the Top (100) Hottest Jobs Statewide for 2008-2018. Growth projections for 2006-2016 indicate a 32.25% projected increase for Postsecondary Teachers, 21.839% projected increase for Geoscientists, and 14.41% for Hydrologists. Furthermore, industry projections for 2006-2016 indicate that Colleges and Universities will increase occupations by 17.4% and the Federal Government will increase occupations 14.6%. The latter, along with private industry are also likely employers for our graduating PhD students.

Short-term employment projections for 2009-2011 demonstrate similar trends (http://lmi.idaho.gov/20092011ShortTermProjections/tabid/2429/Default.aspx). There is annualized growth of 15.47% in Petroleum and Coal Products Manufacturing (324000); 2.17% growth in Professional, Scientific and Technical Services (541000), 1.08% decline in Educational Services (all ownership) (611000), 5.01% growth in Mining (212000), and 0.37% growth in Federal Government (910000). Also during this time period, Professional, Scientific and Technical Services and Educational Services are the top five largest employment industries in Idaho. Professional, Scientific and Technical Services, Mining, and Federal Government are all in the top 10 Hottest Industries and Highest Demand Industries.

**Revenue Generation (state, university):** State-appropriated funding of ISU has diminished by 25% in the past 3 years. To help attract funding from beyond Idaho, the ISU administration strongly supports enhanced research productivity. Every department and college is encouraged to move forward, but this is easiest for those units that already have a research-based infrastructure and culture. As the Department of Geosciences is currently one of the top five research departments on campus, in terms of annual external funding (~\$1M new funding annually from federal sources), it has great potential for increased productivity through departmental growth. The addition of a PhD in Geosciences is the only major programmatic change that is needed; with that in place, the department can compete for external federal funding of larger, more comprehensive projects that require participation by PhD students. For example, some grant programs (e.g., NSF Integrative Graduate Education and Research Traineeship (IGERT)) specifically target training of PhD students. The long term integration of biological and geological research and instruction makes ISU a strong candidate for an IGERT program, but Geosciences must have a doctoral program to be competitive.

Scientific capacity (state, region): Through the past two decades the Department of Geosciences has built its research and graduate education profile considerably, and establishment of the doctoral program is a logical and necessary step to continue that evolution. We have demonstrated an ability to attract top researchers who have built Idaho's broader research profile and benefitted Geoscience programs *throughout* the state. For example new ISU Geosciences faculty in the last decade have built capabilities in the areas of geotechnologies (remote sensing, GIS software development), Earth surface processes, and paleontology—specializations not directly duplicated at other institutions. Students at BSU and UI have benefitted from coursework and advising from these faculty members. Each of the four faculty members hired in these capability areas has received multiple competitive research grants, with grant funding totaling several million dollars.

In addition, as the university focuses on developing more research collaborations with outside agencies, the Department of Geosciences can leverage existing relationships for this mission and for PhD-related research. For example, most members

in the department have existing (or have had) research collaborations with major institutions such as the Idaho National Laboratory (INL, see attached letter of support) and its contractors (e.g. Stoller Environmental), US Geological Survey (USGS) and Environmental Protection Agency (EPA) and their contractors (e.g. private industry such as AquaTerra). In addition, the Department of Geosciences has been a strong participant in the Inland Northwest Research Alliance (INRA) and Center for Advanced Energy Studies (CAES), both ongoing initiatives with INL and other institutions in the Intermountain West.

**Faculty Retention (university):** While our recent success has clearly benefitted ISU and the state of Idaho, the absence of a doctoral program in Geosciences has become a faculty retention issue. We have been able, in part, to attract top faculty with the expectation that they will eventually have a doctoral program with which to work. At least one faculty member has considered leaving ISU if the doctoral program is not established, and that would mean a loss of invaluable expertise, unique instructional capabilities, and hundreds of thousands of dollars per year in research funding.

b. Students – explain the most likely source of students who will be expected to enroll (full-time, part-time, outreach, etc.). Document student demand by providing information you have about student interest in the proposed program from inside and outside the institution.

Differentiate between the projected enrollment of new students and those expected to shift from other program(s) within the institution.

According to the American Geological Institute (AGI), American universities award ~2,600 Bachelor's, ~1,100 Master's, and ~600 Doctorate degrees annually in the Geosciences. About half of these doctoral students consistently enroll in a few (~25) select institutions, leaving the other half (~300 students) as potential customers for the proposed PhD degree. Currently, about 5-10 potential PhD students contact the department every year to request information about PhD programs, and we know a much larger number of potential students do not contact us because they learn through Web browsing that we do not offer a PhD in Geosciences.

Our department hosts 4 active students who are advised by Geoscience faculty while pursuing a PhD in "Engineering and Applied Sciences". This collaborative degree program provides a rare opportunity for our Geoscience students to conduct PhD-level research. Their enrollment at ISU is a strong indication of the demand for PhD-level education in our department, a demand that will increase if the doctorate degree is titled "Geosciences". In the short term, a couple of these students would shift from EAS to Geosciences, but in the long term we anticipate our PhD students will participate in both PhD programs.

Another indication of student demand for a PhD is the number of ISU MS Geology alumni who complete a PhD at other universities. Of the  $\sim$ 100 students who completed a MS Geology degree at ISU during the past twenty years,  $\sim$ 20 students have subsequently obtained a PhD. These are students who potentially would remain at ISU if we offered a Geosciences PhD. We also polled our  $\sim$ 35 current MS students to see how many would consider staying at ISU to complete a PhD. About 30% (10) said they would be interested.

c. Expansion or extension – if the program is an expansion or extension of an existing program, describe the nature of that expansion or extension. If the program is to be delivered off-campus, summarize the rationale and needs assessment.

N/A – This is a new program, not an expansion or extension of an existing program. The program will be delivered and the degree awarded by ISU-Pocatello at the three ISU Geosciences facilities: ISU Physical Sciences (Pocatello), CAES (Idaho Falls), and BCAL (Boise).

#### 6. Resources – fiscal impact and budget

On this form, indicate the planned FTE enrollment, estimated expenditures, and projected revenues for the first three fiscal years (FY) of the program. Include both the reallocation of existing resources and anticipated or requested new resources. Second and third year estimates should be in constant dollars. Amounts should reflect explanations of subsequent pages. If the program is a contract related, explain the fiscal sources and the year-to-year commitment from the contracting agency(ies) or party(ies).

## I. PLANNED STUDENT ENROLLMENT

	FY <u>13</u>		FY <u>14</u>		FY <u>15</u>	
	FTE	Headcount	FTE	Headcount	FTE	Headcount
A. New enrollments	6	6	8	8	10	10
B. Shifting enrollments		2	0	0	0	0

### **II. EXPENDITURES**

		FY <u>13</u>		FY	r <u>14</u>	FY <u>15</u>	
		FTE	Cost	FTE	Cost	FTE	Cost
A. P	ersonnel Costs	<u></u>					
1.	Faculty						. <u></u>
2.	Administrators						
3.	Adjunct faculty		8 ( <del>1</del>				
4.	Graduate/instructional assistants						
5.	Research personnel						
6.	Support personnel						
7.	Fringe benefits						
8.	Other: PhD research assistant	6	\$168,000	8	\$232,000	10	\$300,000
	Total FTE Personnel And Costs;	6	\$168,000	8	\$232,000		\$300,000
-			FY <u>13</u>		FY <u>14</u>	ł	Y <u>15</u>
B. O	perating expenditures						
1.	Travel	_\$6	5,000	\$8,	000	\$10,	0000
2.	Professional services	1		-			
3.	Other services						
4.	Communications						
5.	Utilities						
6.	Materials & supplies	_\$3	3,000	\$4,0	000	\$5,0	00
7.	Rentals				i.		
8.	Repairs & maintenance						
9.	Materials & goods for manufacture & resale						
10.	Miscellaneous			8			
	Total Operating Expenditures:	\$9	9,000	\$12	2,000	\$15,	000

	FY <u>13</u>	FY <u>14</u>	FY <u>15</u>
C. Capital Outlay			
1. Library resources			
2. Equipment			
Total Capital Outlay:		·	
D. Physical facilities Construction or major Renovation			
E. Indirect costs (overhead)			
GRAND TOTAL EXPENDITURES:	\$177,000	\$244,000	\$315,000
III. REVENUES			
	FY <u>13</u>	FY 14	FY 15
A. Source of funds			
<ol> <li>Appropriated funds Reallocation – MCO</li> </ol>			
<ol> <li>Appropriated funds New – MCO</li> </ol>			
3. Federal funds	\$177,000	\$244,000	\$315,000
4. Other grants			
5. Fees			
6. Other:			
GRANT TOTAL REVENUES:	\$177,000	\$244,000	\$315,000
	FY <u>13</u>	FY <u>14</u>	FY <u>15</u>
B. Nature of Funds			
1. Recurring*		9	
2. Non-recurring**	\$177,000	\$244,000	\$315,000
GRANT TOTAL REVENUES:	\$177,000	\$244,000	\$315,000

\* Recurring is defined as ongoing operating budget for the program which will become part of the base.

\*\* Non-recurring is defined as one-time funding in a fiscal year and not part of the base.

a. Faculty and Staff Expenditures

Project for the first three years of the program, the credit hours to be generated by each faculty member (full-time and part-time), graduate assistant, and other instructional personnel. Also indicate salaries. After total student credit hours, convert to an FTE student basis. Please provide totals for each of the three years presented. Salaries and FTE students should reflect amounts shown on budget schedule.

Name, Position, Rank	Annual Salary	FTE	Program	Projected	FTE
	Rate	Assignment	Salary Dollars	Student Credit	Students
		to this		Hours	
		Program			
FY13: PhD Graduate Student	\$28,000	6	N/A	N/A	6
Research Assistant	(includes tuition)				
FY14: PhD Graduate Student	\$29,000	8	N/A	N/A	8
Research Assistant	(includes tuition)				
FY15: PhD Graduate Student	\$30,000	10	N/A	N/A	10
Research Assistant	(includes tuition)				

#### b. Administrative Expenditures

Describe the proposed administrative structure necessary to ensure program success and the cost of that support. Include a statement concerning the involvement of other departments, colleges, or other institutions and the estimated cost of their involvement in the proposed program

		FTE		Percent
Name,	Annual	Assignment	Program	of Salary
Position,	Salary	to this	Salary	Dollars to
And Rank	Rate	Program	Dollars	Program

#### None requested.

c. Operating Expenditures (travel, professional services, etc.) Briefly explain the need and cost for operating expenditures.

Operating expenditures for the graduate research assistants are expected to include travel to present annually at conferences and materials and supplies (e.g. printing, data storage) for their PhD research.

- d. Capital Outlay
  - (1) Library resources
    - (a) Evaluate library resources, including personnel and space. Are they adequate for the operation of the present program? If not, explain the action necessary to ensure program success.
    - (b) Indicate the costs for the proposed program including personnel, space, equipment, monographs, journals, and materials required for the program.
    - (c) For off-campus programs, clearly indicate how the library resources are to be provided.

#### None requested.

(2) Equipment/Instruments

Describe he need for any laboratory instruments, computer(s), or other equipment. List equipment, which is presently available and any equipment (and cost) which must be obtained to support the proposed program.

#### None requested.

e. Revenue Sources

- (1) If funding is to come from the reallocation of existing state appropriated funds, please indicate the sources of the reallocation. What impact will the reallocation of funds in support of the program have on other programs?
- (2) If an above Maintenance of Current Operations (MCO) appropriation is required to fund the program, indicate when the institution plans to include the program in the legislative budget request.
- (3) Describe the federal grant, other grant(s), special fee arrangements, or contract(s) to fund the program. What does the institution propose to do with the program upon termination of those funds?

The PhD graduate research student stipends and the students' associated research costs (travel, materials & supplies) will be funded externally. These funds will come from primarily federal sources, but also private and to a limited degree, state sources. Examples of federal sources are, but not limited to, Department of Energy (DOE), National Science Foundation (NSF), US Geological Survey (USGS), Department of Defense (DOD), Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), US Department of Agriculture (USDA), and National Aeronautics and Space Administration (NASA). Funding is expected to be sustained over the long term based on:

- Geosciences' long-term track record of garnering external funds (e.g. 300% increase in external funding in the past 8 to 10 years, primarily from federal sources but also from private sources, with private sources increasing in the past few years).
- As of Fall 2011, Geosciences has 40 graduate research assistant (RA) positions fully funded by external funds, including 6 PhD RA stipends.
- Geosciences existing research funding is over \$5M/year and increasing.
- Geosciences faculty numbers are growing and every new hire has high expectations for raising external funds.
- The 2 new faculty positions in Geosciences beginning in FY12 are targeted in highly fundable specialties.
- In the unlikely event that funds run out for PhD student stipends and the students' associated research costs, Geosciences will ensure the program's sustainability using the following measures:
  - o Leverage existing TAs within the department
  - o Support students through lab and lecture assistance
  - o Leverage existing private partnerships for internships for students
  - Continue to engage alumni for donations
  - o Continue to emphasize entrepreneurial opportunities for fundraising (workshops, donations, etc.)
  - o Encourage self-supported students through veterans benefits and employed students (e.g. INL)
  - o Use department indirect cost recovery to support students

# Attachment 1

# **IDAHO STATE UNIVERSITY** External Review Report for Notice of Intent

Program: Geosciences Ph.D. Program, Department of Geosciences

College: College of Sciences and Engineering

Reviewers: Gina Tempel, Ph.D., University of Nevada, Reno Wanda Taylor, Ph.D., University of Nevada, Las Vegas

## Introduction

Based on our review of their existing programs, it is readily apparent that the Department of Geosciences at Idaho State University is an emerging department in data-intensive computing (cyber-infrastructure) research and is poised to contribute to the future growth of resource exploration and development in Idaho. Over the past two decades, the department has been on an upward trend in the quality of research conducted by faculty and the quality of students graduating from ISU. We observed that the department is a vibrant community of faculty interacting with a dedicated group of undergraduate and master's level graduate students. In the past few years, the department has experienced an infusion of new faculty members who are making significant contributions as researchers in the areas of geotechnology, paleontology, and Earth surface processes. For this upward trend to continue in the department in research, faculty growth, and increased quality of graduate students, we recommend the establishment of a Ph.D. program in the geosciences.

The State of Idaho will benefit from an increase in the number of Ph.D. programs in the geosciences at its state-supported academic institutions because growth in geoscience programs is essential to the future economic development of the State. The State of Idaho is rich in mineral and energy resources, and economic progress requires a geoscience workforce that is well-educated and capable of utilizing and advancing state-of-the art technologies for exploration and extraction of these resources. Increasingly, international corporations in minerals and energy resources are employing professionals with Ph.D. degrees. For the geoscience workforce from Idaho to remain competitive in this global resource market, the academic institutions within the State will need to graduate more professionals with Ph.D. degrees. Thus, establishment of a Ph.D. program in the geosciences at Idaho State University ensures that sufficient opportunities exist for the in-state workforce to be well-educated and remain competitive among all geoscience workers both within the State and internationally.

Below, we provide our review to the Idaho Board of Education of the readiness of the Department of Geosciences at Idaho State University for a Ph.D. program in Geosciences. We discuss the quality of faculty, students, infrastructure support, funding sources, outcome and performance measures, possible duplication of other programs in the State of Idaho, centrality, demand and resources available to the department that we observed during our review. Following careful consideration, we recommend that the Board of Education approve the Ph.D. in Geosciences program at Idaho State University.

## Quality

- <u>Curriculum</u> The current graduate curriculum shows strong emphasis on the geotechnologies (i.e. GIS, GPS) coupled with more traditional geoscience courses in Volcanology, Petrology, Engineering Geology, and Field Geology. Teaching facilities have been recently updated and classrooms are equipped with recent upgrades in microscopes and computers. No new courses or facilities are needed to support Ph.D. level studies because existing curricula and facilities will afford Ph.D. students a solid education.
- 2. <u>Faculty</u> Faculty show strength in teaching, current research, and external funding. Recent hiring of junior faculty indicates a high degree of vibrancy in the ISU Geosciences department during an era when faculty in many Geoscience departments nation-wide are aging with few junior faculty replacements to ensure future stability. We believe that the timing of this proposal is excellent because of the rise in research activity, recent hires, and quality of master's students over the past few years. Faculty in the ISU Department of Geosciences are fully qualified to mentor Ph.D. level students to graduation.
- 3. <u>Students</u>- The current M.S. level graduate program in the ISU Department of Geosciences is evaluated to be very high quality with over 40 students advised by 10 faculty. Currently, M.S. graduates from the department who are continuing on to earn Ph.D. degrees are doing so at top universities in the geosciences, such as Princeton, MIT, and USC. Recruitment of ISU students by these prestigious institutions provides further evidence that the ISU M.S. program is of high quality, and that faculty in the department are highly competent in graduate education. Many of the department's current M.S.-level students are of the caliber to continue as Ph.D. students as evidenced by research publications and presentations at national meetings. It is anticipated that a significant source of students for a Ph.D. program would be internal with the best ISU M.S. students continuing their studies toward a Ph.D. degree within the department. Additional recruitment would take place at annual meeting of geoscience professional societies.

- 4. <u>Infrastructure Support</u> The quality of research and teaching equipment/instrumentation and computing facilities that are available to the department is excellent. The department has a GIS Training and Research Center with state-of-the-art computing capabilities, a Digital Mapping and Research Laboratory to produce geologic maps of state resources, and the Boise Remote Sensing Lab to provide expertise for research and teaching of remote sensing technologies. Other facilities that accessible to the department are at the Center for Archaeology, Materials and Applied Spectroscopy (CAMAS). Instrumentation and technical support for CAMAS provide faculty with the capability for state-of-the-art geochemical analyses. Office staff and other technical support within the department are more than adequate to support Ph.D. level studies.
- 5. <u>Funding Resources</u> The ISU Department of Geosciences has demonstrated that it is competitive in the national arena of research funding. The 2011 Carnegie Classification ranks Idaho State University in the high research activity category placing it among the 99 high research activity universities in the US. In the National Science Foundation ranking of R&D expenditures for 2009, <u>Idaho State University ranked in the Top 100 Earth Sciences programs at U.S. universities and colleges with expenditures of \$2.2M</u>. These research expenditures accounted for 12% of the overall Idaho State R&D expenditures for sciences and engineering of \$18.8M in 2009. With the addition of new, junior research active faculty the continued success and sustainability of research in the department will be ensured. Thus, the Department of Geosciences at ISU will be fully capable of funding research and supporting graduate students in a Ph.D. program.
- 6. <u>Outcome and performance measures</u>- The numbers of professional papers produced per year as well as research funding per faculty member are consistent with faculty in other Ph.D. level programs. With regard to assessment, the Department of Geosciences recognizes that it must develop a solid assessment plan for courses and curriculum outcomes, and it is currently working on these plans.
- Business and industry support and partnerships In our review, we observed that the ISU Department of Geosciences appears to have solid relationships with Idaho National Laboratory, Idaho Geological Survey, and the US Geological Survey (USGS). A joint appointment is held by one faculty member in both the department and the Idaho Geological Survey, and the USGS also has a physical presence in the department.
- 8. State Licensing Board and other agency support- Does not apply.

## **Duplication**

The Department of Geosciences at ISU has a strong core curriculum and conducts fundamental geoscience research that is required of any program. The department shows uniqueness in the area of cyberinfrastructure (CI), or dataintensive computing for scientific exploration. In CI research and teaching, the department has developed a niche expertise within Idaho to support the science and engineering of natural resource exploitation or the geotechnologies. Their research and teaching areas are particularly strong in CI for hydroinformatics (exploring, sharing, and analyzing hydrologic information), remote sensing, and Global Information Systems (GIS). A complementary aspect of program is the large amount of interdisciplinary research with other faculty and students in other departments on campus including Biosciences and Engineering as well as other institutions in Idaho (BSU and U of I). We emphasize the complementary aspect of the ISU program over any competitive aspects. Addition of new faculty has benefited collaboration with BSU and U of I. In large part, the expertise of faculty at ISU is different in geoscience expertise and focus than faculty at BSU and U of I.

## Centrality

According to the State Board of Education (<u>www.boardofed.idaho.gov</u>), the assigned mission for Idaho State University:

**IRSA** 

"... is a *doctoral university* serving a diverse population through research, state, and regional public service, undergraduate *and graduate programs*".

The mission states that ISU:

"...will formulate its academic plan and generate programs with primary emphasis on health professions, the **related** biological and **physical sciences**, and teacher preparation. ISU will give continuing emphasis in the areas of business, education, engineering, **technical training** and will maintain basic strengths in the liberal arts and **sciences**, which provide the core curriculum or general education portion of the curriculum."

We believe that the establishment of a doctoral program in the Geosciences at ISU is consistent with the State Board of Education and the Idaho State University mission stating that ISU is a doctoral university and that disciplines within the physical sciences (which include Geosciences) are key emphasis areas for growth along with the health professions and biological sciences. Further, ISU upper administration indicated to us that the Geological Sciences faculty and students are regarded highly and have high priority in terms of resource allocation on campus. We concur in our review that Geological Sciences is an area of outstanding faculty, research and students on the ISU campus. Thus, establishment of a Ph.D. program would ensure the continued growth, success, and strength of this promising program and build on the physical sciences as a focus area of the university as stated in the mission.

## Demand

Science in general is becoming more interdisciplinary in nature. In particular, geoscientists may be found commonly collaborating with biologists, chemists, engineers, and computer scientists to help solve societal and environmental problems world-wide. In Idaho, the demand to educate and provide workforce training for crossdisciplinary geoscientists will increase as the need to explore and exploit Idaho's abundant mineral and environmental resources increases. With a doctoral program in the geosciences, ISU will be able to educate, along with the University of Idaho and Boise State, an increasing number of geoscience professionals in-state. While U of I and BSU have existing Ph.D. programs, a thriving Idaho economy may demand more educated professionals in the future than two programs can provide. To ensure that the in-state workforce will continue to be competitive for professional positions in private industry and government, the ability to educate more Ph.D. professionals within Idaho needs to be expanded. Further, as the diversity of employment opportunities in the geosciences increases within Idaho, greater breadth of technical expertise will be needed. With the addition of a Ph.D. program in Geosciences at Idaho State University, the Idaho workforce will have wider range of advanced geoscience research areas to choose from and have increased opportunities to remain competitive in Idaho's resource and environmental markets. In sum, the addition of a Ph.D. degree in the Geosciences at ISU will serve to strengthen the breadth of geoscience research and education within Idaho and complement the two existing Ph.D. programs at U of I and BSU.

Currently, an educated geoscience workforce need has been identified within the Idaho National Laboratory, water district, local agricultural industry, mining and natural resource industry, Idaho Geological Survey, U.S. Geological Survey, and U.S. Environmental Protection Agency. ISU trained Ph.D. graduates will help Idaho to be poised as a regional leader in cyber research and applied geology.

## Resources

No new resources are needed by the department to implement this program. The Department of Geosciences has all necessary equipment, infrastructure, curricula, facilities, etc. to support a Ph.D. program. However, one new faculty position will be needed to sustain a strong Ph.D. program in the department. The departure of Dr. Rodgers to College-level administration leaves a vacancy in structural geology and tectonics, disciplines that are fundamental to geosciences, are traditional departmental strengths, and are of particular importance given the physical location and strategic plan of ISU Geosciences.

## Conclusion

As stated in the Introduction of this report, we, the reviewers believe that the Department of Geosciences at Idaho State University is ready to support a Ph.D. program that will contribute to the education of the workforce of the State of Idaho and grow, over time, into a nationally recognized program for the geo-technologies. Further, we believe that the establishment of a Ph.D. program in the Geosciences at ISU will complement existing Ph.D. programs at the University of Idaho and Boise State. All three universities have strong geoscience programs, and all three universities have different strengths. Thus, the three universities together will provide the expertise in mineral and energy exploration and production to make Idaho a national leader in natural resource development.

## ISU Response to External Evaluation

March 5, 2012

Idaho State Board of Education Mailing Address: P.O. Box 83720 Boise, ID 83720-0037

RE: External review report for ISU Geosciences PhD program proposal

Dear State Board Members:

We are pleased to submit the attached report detailing the external review of our PhD program proposal. We concur with the content and tone of the report, which emphasizes that our department is fully capable of offering a high-quality doctoral program in Geosciences, that the program can be largely run with existing resources, and that the program will serve the training and infrastructure needs of Idaho well.

We acknowledge that the report cites the need for a faculty position in Structural Geology to replace a faculty member who has moved up to college-level administration. This position is essential to a core strength of the department in Structural Geology and related areas, and will strengthen both undergraduate and graduate education in areas essential for employment in Idaho's natural resource-rich economy. We are currently conducting a search for that faculty member, and our administration is exploring funding options for the position.

This doctoral program is complementary to other doctoral programs in Geology and Geosciences in Idaho. Specifically, this program will emphasize our strengths in the following areas:

- 1. Geotechnologies: We have several faculty actively researching Geographic Information Systems, Remote Sensing, and development of Water Management software.
- 2. Earth Surface Processes: We have developed strength in this area, with multiple faculty conducting research in Earth Surface Hazards, Landscape Development, Paleoclimatology, and Stream and Groundwater Hydrology.
- 3. Geology and Natural Resources of Idaho and the Intermountain Region: Multiple faculty conduct research in Sedimentology, Paleontology, Geothermal Energy, Volcanology, and related topics essential to understanding and assessing regional natural resources.

Thank you for the opportunity to present this full program proposal. We look forward to its consideration by the State Board of Education and associated councils, and will be happy to answer specific questions that may arise.

Sincerely,

Dan D. Thacha

Glenn D. Thackray Professor and Chair of Geosciences

### Attachment 2 Proposed Catalog Copy

## **Doctor of Philosophy in Geosciences**

The Ph.D. program in Geosciences is offered to those students who have demonstrated strong aptitude for independent research and scholarly activity. Research can be conducted in any field of Geoscience in which ISU faculty have expertise. The student's course of study will be determined in consultation with their advisors. Continued enrollment in the program is contingent upon maintaining a 3.0 grade point average and making satisfactory progress toward the degree. In order to complete the research and prepare the dissertation, the program will normally require three years of full-time study beyond the master's degree. In some special cases, a student with exceptional undergraduate academic record and aptitude for research but without an appropriate M.S. degree may be directly admitted to the Ph.D. program.

#### **General Requirements**

For entering students with an appropriate MS degree, the PhD curriculum will consist of 54 credits including a maximum of 22 credits of graduate level coursework relevant to the research focus and a minimum of 32 credits of dissertation (Geol 8850). At least 40 credits must be taken with the ISU Department of Geosciences, and 2 to 4 of the graduate level course credits will be a graduate seminar (Geol 5508, 5580, 5591, 5599, or 6603). Classes and seminars may be taken at, or in collaboration with, Boise State University and/or the University of Idaho. An example credit-based program of study for a student who enters the PhD program with an MS degree is:

Semester	1	2	3	4	5	6	Total
Course Work	9	9	1	1	1	1	22
Dissertation			8	8	8	8	32

Students not possessing an appropriate M.S. degree must earn an additional 30 graduate credits (for a total of 84 credits applied to the PhD degree). Of these 30 credits, at least 17 credits must be at the 600 level in Geosciences while 13 credits (including up to 8 from a related discipline) can be the 500 or 600 level.

#### **Program of Study**

An Advisory Committee of three members, including at least two Idaho State University graduate faculty from Geosciences, will be established for each student upon entry into the program. The committee will guide the student in establishing his or her program of course work and laboratory study based upon the student's background and research interest. The advisory committee has the responsibility of ensuring that the student has adequate knowledge to support research in his or her chosen area of interest. At the end of the first year, the student will take a written, comprehensive qualifying examination covering the relevant information within the scope of the research area. A student taking the comprehensive qualifying examination material in the written exam that was not adequately answered. However, the Advisory Committee, at its discretion, may excuse a student from taking the oral examination if the student excels in the written examination. The student will be allowed two attempts to pass the oral examination, and the second attempt must be within one-half year after the first attempt. The student will be admitted to candidacy upon passing the comprehensive qualifying examination.

A dissertation committee of five members, chaired by the candidate's major professor and including at least two other graduate faculty from ISU Geosciences, will then be appointed. Dissertation Committees with graduate faculty from Boise State University and University of Idaho are encouraged. Within six months of passing the comprehensive qualifying examination, the candidate, with guidance from the major professor, will satisfactorily complete an oral presentation and defense of a prospectus for dissertation research to the committee. The candidate can submit the final dissertation any time after six months from the date of acceptance of the research prospectus. Dissertation approval requires a public presentation of the dissertation and a satisfactory oral defense to the Dissertation Committee. Doctoral oral examinations are open to all regular members of the faculty as observers. Further, oral presentations are open to the public until questioning by the Dissertation Committee begins.

#### Geology Graduate Courses GEOL 5502 Geomorphology 4 credits.

Process response approach to landforms and landscapes. Historical perspectives, endo- and exogenetic processes, equilibrium and relict landforms. Emphasis on interrelations among various geologic sub-disciplines. Field trips, some lab exercises. PREREQ: GEOL 3313 OR PERMISSION OF INSTRUCTOR.

GEOL 5502L Geomorphology Laboratory 0 credits.

GEOL 5503 Principles of Geographical Information System 3 credits. Study of GIS fundamentals, introduction to GPS, databases, and metadata. Practical application of ESR1 ArcView®. Build, edit, and query a GIS; basic spatial analysis. Requires competence in computer operating systems. PREREQ: CIS 1101 OR INSTRUCTOR APPROVAL; COREQ: GEOL 5503L.

GEOL 5503L Principles of GIS Laboratory 0 credits. Computer lab assignments to apply principles from GEOL 5503.

GEOL 5504 Advanced Geographic Information

Systems 3 credits. Study of relational databases, including spatial analysis, and remote sensing. Practical application of Arc/Info and Idrisi. Exercises include digitizing, querying, digital terrain modeling, and image processing. PREREQ: GEOL 5503, GEOL 5503L OR PERMISSION OF INSTRUCTOR.

GEOL 5505 Volcanology 3 credits. Aspects of physical and chemical volcanology: types of volcanoes; interpretation of volcanic deposits; properties of magma; generation, rise, and storage of magma; volcanic hazards and prediction. PREREQ: ONE OF GEOL 3314. GEOL 5502, GEOL 4421, OR GEOL 5552.

GEOL 5506 Environmental Geology 3 credits. Humans and the environment. Topics include: industrial exploitation of fossil fuels, energy sources, soils, water and other materials, environmental health, pollution, waste disposal, hazards, disasters, and land use. PREREQ: GEOL 1100 OR GEOL 1101.

GEOL 5507 GPS Application in Research 3 credits. Overview of satellite positioning systems usage. Topics include GPS theory, basic mapping concepts, use of mapping grade receivers for GIS data collection, and processing of carrier phase data for high precision applications.

GEOL 5508 GeoTechnology Seminar 2 cr. GIS applications in natural and social sciences; ethical and legal issues, current status and recent advances in GeoTechnology. Lectures, discussion, readings. PREREQ: GEOL 5503. GEOL 5503L OR PERMISSION OF INSTRUCTOR.

GEOL 5509 Remote Sensing 3 credits.

Fundamentals and applications of single frequency, multispectral, and hyperspectral remote sensing for physical, natural, engineering, and social sciences. Emphasis on acquiring, processing, integrating, and interpretation of imagery. Requires competence in computer operating systems.

GEOL 5510 Science in American Society 2 credits.

Observational basis of science; technology's historical influences on scientific developments; perceptions of science in contemporary America; tools/strategies for teaching science. Cross-listed as PHYS 5510. PREREQ: JUNIOR STANDING AND PERMISSION OF INSTRUCTOR.

GEOL 5511 Planetary Petrology 3 credits. Chemistry, mineralogy, tectonic association and petrogenesis of the principal igneous and metamorphic rock types on Earth and other planetary bodies. PREREQ: GEOL 3314.

GEOL 5512 Petrology Lab 2 credits. Microscopic identification of igneous and metamorphic minerals and rocks. PREREQ: GEOL 3313 AND GEOL 2211. COREQ: GEOL 5511.

GEOL 5515 Quaternary Global Change 3 credits. Use and interpretation of landforms, sediments, and fossil life in the reconstruction of Quaternary events, environment, and climates. PREREQ: PERMISSION OF INSTRUCTOR. GEOL 5516 Global Environmental Change 3 credits. Analysis of the causes and effects of both natural and human-induced environmental change. Integrates knowledge from other Earth Systems Science Courses, and examines and analyzes relevant problems in global environmental change using scientific methods. PREREQ: GEOL 1115, GEOL 1115L, GEOL 2310, GEOL 5506, and BIOL 2209.

GEOL 5517 General Soils 3 credits. Formation, morphology, and distribution of soils, including developments in soil classification. PREREQ: GEOL 1100 OR GEOL 1101 OR GEOL 1115, OR PERMISSION OF INSTRUCTOR.

GEOL 5520 Principles of Geochemistry 3 credits. Chemistry of the earth; discussion of factors controlling abundance, distribution, and migration of chemical elements within the earth. PREREQ: GEOL 2211, AND CHEM 1111, CHEM L1111, CHEM 1112, CHEM L1112, OR PERMISSION OF INSTRUCTOR.

GEOL 5522 Planetary Geology 3 credits. Formation of planetary bodies (planets, moons, asteroids, and comets), internal and surficial processes, tectonics, and planetary exploration. PREREQ: GEOL 1100 OR GEOL 1101 OR PERMISSION OF INSTRUCTOR.

GEOL 5527 Information Technology for GIS 3 credits. Study of servers, networks, system administration, relational database design and management, spatial database engines, and serving maps on the internet. The course uses traditional lectures along with demonstrations, and hands-on exercises. PREREQ: GEOL 5503, GEOL 5503L OR PERMISSION OF INSTRUCTOR.

GEOL 5528 Programming for GIS 3 credits. Course introduces students to Visual Basic programming for GIS. Students will learn the fundamentals of object oriented programming, rapid application development, basic coding, help documentation, and compiling. Students will complete a project where they develop a GIS utility of their choice. PREREQ: MATH 1147 AND GEOL 1100 OR 1101, OR PERMISSION OF INSTRUCTOR.

GEOL 5530 Principles of Hydrogeology 3 credits. Surface and groundwater occurrence, movement and recovery, water quality and pollution, well construction principles, and computer modeling. PREREQ: GEOL 1100 OR GEOL 1101, OR PERMISSION OF INSTRUCTOR.

GEOL 5531 Geobiology and the History of Life 4 credits. Principles of biology and geology applied to the study of fossil invertebrates; consideration is given to morphology, classification, evolution, paleoecology, and the stratigraphic significance of fossils. ;PREREQ: GEOL 2202 (recommended); PERMISSION OF INSTRUCTOR.

GEOL 5531L Invertebrate Paleontology Laboratory 0 credits.

GEOL 5535 Vertebrate Paleontology 4 credits. Phylogenetic history of the vertebrates outlined in the light of morphology, classification, evolution, paleoecology, and the significance of fossils. Field trips. Cross-listed as BIOL 5535. PREREQ: GEOL 5531 OR BIOL 3314 OR EQUIVALENT. GEOL 5539 Principles of Taphonomy 3

credits. Effects of processes which modify organisms between death and the time the usually fossilized remains are studied. Emphasis on vertebrates. Cross-listed as ANTH 5539 and BIOL 5539. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL 5540 Ore Deposits 3 credits. Nature, mode of occurrence, and origin of ores with each type related to a given rock association and as the product of a particular environment. PREREQ: ONE OF GEOL 3314, GEOL 5552 (RECOMMENDED), OR GEOL 4421.

GEOL 5545 Environmental and Engineering Geophysics 4 credits. Geophysical applications to environmental and geological engineering problems. Includes seismic, gravity, magnetic, electrical, and electromagnetic methods. (Includes lab.) PREREQ: MATH 1144 OR 1147, GEOL 1100 OR 1101, OR PERMISSION OF INSTRUCTOR.

GEOL 5550 Field Geology 6 credits. Five-week summer field camp, applying standard geologic field instruments and geologic concepts to a series of field problems. PREREQ: GEOL 4421 and GEOL 5552, GEOL 3314 (recommended) or GEOL 4420.

GEOL 5551 Field Methods in Environmental Sciences 3 credits. Practical application of field methods with an Earth systems focus. Analysis of topographic and vegetational data, hydrologic methods, riverine processes and habitat, and soil characteristics, emphasizing use of GIS, GPS, remote sensing and other geotechnologies. Twoweek summer course at Lost River Field Station. PREREQ: GEOL 5503 and GEOL 5503L, and either GEOL 5515 or GEOL 5516, and BIOL 2209.

GEOL 5552 Sedimentation-Stratigraphy 4 credits. Principles of sedimentation from source to diagenesis. The basis of stratigraphic nomenclature, classification, and correlation of rock units. Laboratory covers unconsolidated sediment, hand specimens, subsurface, and field techniques. PREREQ: GEOL 2210 AND ENGL 1102 OR PERMISSION OF INSTRUCTOR. COREQ: CHEM 1111.

GEOL 5552L Sedimentation-Stratigraphy Laboratory

0 credits. Assignments to apply principles in GEOL 5552. COREQ: GEOL 5552. GEOL 5554 Basic Engineering Geology 3 credits. Geology applied to engineering projects; geotechnical problems in civil projects; site methods. Subsurface investigations including scope, logging, and in situ and geophysical methods. Cross-listed as CE 5554. PREREQ: GEOL 3314 OR CE 3332.

GEOL 5555 Geologic Data Methods 3 credits. Classification of geotechnical projects. Geologic mapping for civil engineering purposes. Development of engineering geologic profiles. Pre-bid geotechnical investigations and field

instrumentation for civil works projects. Crosslisted as CE 5555. PREREQ: GEOL 4450. GEOL 5556 Geology of Idaho 2 credits.

Geologic provinces and plate tectonic history of Idaho. Topics include basement, Belt Supergroup, Phanerozoic passive margin, Cordilleran orogen, accreted terranes, Idaho batholith, Challis volcanics, Idaho mineral deposits, Basin and Range, Snake River and Pleistocene floods. PREREQ: GEOL 1100 OR GEOL 1101.

GEOL 5558 Geology of North America 3 credits. Regional stratigraphy and tectonics of North America emphasizing National Parks and the Intermountain West. Graduate students will do extensive additional reading in current literature. PREREQ: GEOL 1100 OR GEOL 1101.

GEOL 5565 Subsurface Geology 3 credits. Principles of well log interpretation and correlation, core and cuttings description, cross section and subsurface map creation. Environmental geology, hydrogeology, mining, geological engineering, and petroleum applications. PREREQ: GEOL 2210 OR PERMISSION OF INSTRUCTOR.

GEOL 5571 Historical Geography of Idaho 3 credits. Influences of geography and geology on Idaho's economic, political and cultural history. May be team taught and include field trips, discussion sections. Cross-listed as HIST 5571 and POLS 5571.

GEOL 5575 Essentials of Geomechanics 3 credits. Essentials of rock fracture relevant to geological engineering including stress and strain, properties and classification of rock masses, rock fracture mechanisms. Cross-listed as CE 5575. PREREQ: GEOL 4421 OR ENGR 3350.

GEOL 5576 Engineering Geology Project 1 credit. Team projects studying actual problems in engineering geology. Cross-listed as CE 5576. PREREQ: GEOL 5554 OR CE 5554.

GEOL 5580 Special Topics in GIS 1-3 credits. Visual Basic programming for GIS. May be repeated. PREREQ: GEOL 5503 and GEOL 5503L OR PERMISSION OF INSTRUCTOR. GEOL 5581 GeoTechnology Internship 1-3

credits. Choose a project with either natural resource or municipal GIS emphasis and work with real-world data at the internship's offcampus location. Projects focus on using/creating geotechnical data. PREREQ: GEOL 5503 and GEOL 5503L OR PERMISSION OF INSTRUCTOR.

# GEOL 5583 Earthquake Engineering 3 credits.

Mechanism and characterization of earthquakes; seismic risk analysis; site and structural response; applications from points of view of engineer and geologist. Cross-listed as CE 5580. PREREQ: GEOL 3313 OR CE 3332, OR PERMISSION OF INSTRUCTOR.

GEOL 5591 Seminar 1 credit. Field trip or discussion of current geologic literature and geologic problems. May be repeated until 3 credits are earned. PREREQ: PERMISSION OF INSTRUCTOR. Graded S/U.

#### GEOL 5597 Professional Education Development

Topics. Variable credit. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be repeated. May be graded S/U.

GEOL 6601 Advanced Physical Geology 2 credits: An advanced level course in physical geology required for all first year graduate students. A review of the principles of physical geology, and an overview of current hypotheses and research in the field.

GEOL 6602 Advanced Geomorphology 3 credits. Seminar in the treatment of theoretical concepts in classical and modern geomorphology. GEOL 6603 Geologic Writing Seminar 1 credit.

Review of quality geologic writing practices; extended field trip and introduction to regional geology. Topics include databases, abstracts, stratigraphic terminology, grant proposals, thesis prospecti, and use of reference library. Required for all Geosciences graduate students.

GEOL 6604 Watershed Modeling 3 credits. Use of geographic information systems and integrated simulation models to study the hydrologic cycle, water quality, agricultural and industrial impacts, environmental and related issues at the watershed scale. PREREQ: GEOL 5404.

#### GEOL 6606 Geostatistical Spatial Data Analysis

and Modeling 4 credits. Description, analysis and modeling of spatial data in the geosciences, emphasizing hands-on application of geostatistical software tools for spatial analysis and probabilistic modeling in petroleum and groundwater reservoirs, environmental remediation, and mining or any application involving spatially-varying data. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL 6607 Spatial Analysis 3 credits. This course focuses on advanced techniques for spatial data analysis covering issues in sampling, characterizing, visualizing, exploring and modeling spatial data. Techniques for point patterns, continuous data, area data, and spatial interaction data will be emphasized. PREREQ: GEOL 5503, MATH 1170/1175, AND A BASIC STATISTICS CLASS (e.g., MATH 2253) OR PERMISSION OF INSTRUCTOR.

GEOL 6609 Advanced Image Processing 1 credit. An advanced-level course in image processing

techniques, such as using transforms, filters, and classifiers for data derived in the visible, infrared, and microwave. Specific topics include preprocessing, endmember analysis, classification (including spectral unmixing), and accuracy assessment. Practical application of theory for graduate student theses and dissertations. PREREQ: GEOL 5509.

GEOL 6615 Neutron Activation Analysis 4 credits. Theory and use of neutron activation methods for quantitative chemical analysis of natural and synthetic materials. Applications in geologic systems will be emphasized. Crosslisted as CHEM 665, PHYS 6615. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL 6617 Environmental Geochemistry 3 credits. Geochemistry of environmental systems. Emphasis given to low-temperature water-rock interactions, including sorption processes, retardation, reaction kinetics and reaction-mass transport modeling. Cross-listed as CHEM 6617. PREREQ: CHEM 1112 AND GEOL 5520 OR CHEM 3351.

GEOL 6618 Applied Geophysics 3 credits. Geologic interpretation of reflection seismic, refraction seismic, gravity, magnetic, and groundpenetrating radar data.

GEOL 6621 Advanced Structural Geology 3 credits. Current aspects of structural geology or tectonics. May focus on regional structures, tectonic theories, orogenic mechanics, global tectonic model(s), or topics of special interest in structural geology.

GEOL 6622 Orogenic Belts of the World 3 credits. Interdisciplinary analysis of Alpine and Cordilleran-type mountain belts including their infrastructure, tectonic evolution, and mechanisms of formation.

GEOL 6623 Tectonics and Sedimentation 3 credits. Sedimentary basin analysis and mechanisms of subsidence. Extensional, compressional and strike-slip tectonics as related to depositional systems, facies architecture, and provenance.

GEOL 6625 Quantitative Geochemistry Lab 3 credits. Practical application of theory involving use and operation of instrumental techniques. Cross-listed as CHEM 6625.

GEOL 6628 Advanced GIS Programming 3 credits. Course focuses on Visual Basic for Applications (VBA) programming for ArcGIS. Students will learn to navigate, interact, and utilize ArcObjects to customize ArcGIS and to create and distribute their own customizations (i.e., dll). PREREQ: GEOL 5503, GEOL 5528, AND PERMISSION OF INSTRUCTOR.

GEOL 6630 Advanced Hydrogeology 3 credits. Advanced topics in hydrogeology, including precipitation and stream flow, soil moisture, principles and modeling of groundwater flow, migration of wastes in both saturated and unsaturated zones, design and impact of production wells, water chemistry. PREREQ: GEOL 5530 OR EQUIVALENT.

GEOL 6631 Sedimentology 3 credits. Provenance, dispersal, and environments of deposition; emphasis on various aspects of surface equilibria.

GEOL 6641 Advanced Petrology 3 credits. Selected topics in igneous and/or metamorphic petrology, regional and/or global aspects of current interest, including relationship to major advances in other areas of solid earth sciences. GEOL 6646 The Sedimentary Record 4 credits. Earth history as revealed in sedimentary facies, provenance, chemical and isotopic excursions. Methods of analysis including sequence stratigraphy, geochronology, biogeochemistry, chemostratigraphy. Sedimentary petrology and field methods emphasized in lab.

GEOL 6648 Research Problems 1-6 credits. Independent research on non-thesis subject matter, subject to approval of the staff before results receive credit. Course may be repeated until 10 credits are earned.

GEOL 6650 Thesis 1-9 credits. Ordinarily a fieldproblem with supporting laboratory work undertaken by the student with approval of the geology graduate faculty, and after a thesis prospectus has been accepted. May be repeated. Graded S/U.

**GEOL 8850 Doctoral Dissertation Variable credits.** Research toward and completion of the dissertation. May be repeated Graded S/U

#### Attachment 3

#### Graduate Faculty – ISU Geosciences Publications are provided on following pages

Dr. Dan Ames, PhD, P.E., Associate Professor, Specialties: Hydroinformatics, GIS software development. Affiliated with Civil Engineering.

Dr. Ben Crosby, PhD, Assistant Professor, Specialties: Fluvial Geomorphology, Landscape Analysis, Effects of climate change.

Dr. Nancy Glenn, PhD, P.E., Research Professor, Specialties: Remote Sensing (LiDAR, Hyperspectral) analysis of landscapes and vegetation. Affiliated with Civil Engineering, Joint appointment with INL.

Dr. Sarah Godsey, PhD, Assistant Professor, Specialties: Surface Hydrology, GIS. Hired January 2012.

Dr. Shannon Kobs, PhD, Assistant Professor, Specialties: Volcanology, Eruption dynamics. Hired August 2011.

Dr. Paul Link, PhD, Professor, Specialties: Stratigraphy, Sedimentology, Detrital zircon analysis, Regional Geology.

Dr. Mike McCurry, PhD, Professor, Specialties: Petrology, Volcanology, Geothermal.

Dr. David Rodgers, PhD, Professor and Associate Dean, Specialties: Structural Geology, Tectonics.

Dr. Leif Tapanila, PhD, Associate Professor, Specialties: Carbonate sedimentology, Invertebrate Paleontology, Impacts.

Dr. Glenn Thackray, PhD, Professor and Chair, Specialties: Glacial geomorphology, Quaternary geology.

## Geoscience and associated Faculty with instructional and administrative assignments

Dr. Helen Bender, PhD, Assistant Lecturer, Specialties: GIS, Remote Sensing, GPS. Begins employment August 2011

Ms. Lori Tapanila, MS, Assistant Lecturer: Specialties: Physical Geology, Metamorphic Petrology

## ISU Biological Sciences Faculty with joint appointments to Geosciences Publications are provided on following pages

Dr. Bruce Finney, PhD, Professor, Specialties: Stable isotope analysis of marine/lacustrine sediment, Paleoclimate analysis

Dr. Kitty Lohse, PhD, Assistant Professor, Specialties: Soil biogeochemistry, critical zone processes

#### ISU GIS Training and Research Center Publications are provided on following pages

Mr. Keith Weber, MS, Director of the GIS Training & Research Center. Specialties: GIS Programming, Wildlife Biology

#### Affiliate Faculty – ISU Geosciences Publications are provided on following pages

Dr. Teki Sankey, PhD, Research Assistant Professor, Specialties: Remote sensing of vegetation cover change.

Dr. John Welhan, PhD, Idaho Geological Survey Supervisory Research Geologist, Specialties: Geothermal, Geostatistics, Low-temperature geochemistry.

#### **Geoscience Faculty Publications (2000-present)**

\* indicates publication was jointly authored by 2 or more ISU Geoscience faculty

331 peer-reviewed papers, books, and maps

11 years, 13 faculty >> 2.3 pubs/faculty/year

#### ISU Graduate Faculty in Geosciences

#### Dan Ames

- Alexandrov, G.A., D. Ames, G. Bellocchi, M. Bruen, N. Crout, M. Erechtchoukova, A. Hildebrandt, F. Hoffman, C. Jackisch, P. Khaiter, G. Mannina, T. Matsunaga, S.T. Purucker, M. Rivington, L. Samaniego, Technical assessment and evaluation of environmental models and software: Letter to the Editor, Environmental Modelling & Software, In Press, Corrected Proof, Available online 24 September 2010, ISSN 1364-8152, DOI: 10.1016/j.envsoft.2010.08.004.
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- Ames, D. P., B.T. Neilson, D.K. Stevens, and U. Lall, 2005. Using Bayesian networks to model watershed management decisions: an East Canyon Creek case study. Journal of Hydroinformatics 7(4): 267-282.
- Ames, D.P. 2007. *MapWinGIS Reference Manual: A function guide for the free MapWindow GIS ActiveX component*. 194 pages, self-published through Lulu.com, Morrisville, North Carolina.
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- Baloch, M.A., Ames, D.P., Tanik A., 2011. Application of BASINS/HSPF in the Koycegiz–Dalyan watershed in Turkey: A developing country case study in watershed modeling. *River Basin Management VI, Wessex Institute of Technology* (WIT) Transactions on Ecology and the Environment, Vol 146.
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- Jolma, A., Ames, D. P., Horning, N., Mitasova, H., Neteler, M., Racicot, A., and Sutton, T., 2008. Free and Open Source Geospatial Tools for Environmental Modelling and Management. In: A.J. Jakeman, A.A. Voinov, A.E. Rizzoli and S.H. Chen (eds): Developments in Integrated Environmental Assessment, vol 3, pages 163-180. Elsevier (DOI 10.1016/S1574-101X(08)00610-8), ISBN: 978-0-080-56886-7.
- Jolma, A., D.P. Ames, N. Horning, H. Mitasova, M. Neteler, A. Racicot, and T. Sutton, 2008. Environmental Modeling and Management Using Free and Open Source Geospatial Tools. Encyclopedia of GIS. Sashi Shekhar and Hui Xiong (Editors). Springer, New York, pp. 275-279.
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#### Ben Crosby

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## Nancy Glenn

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Sarah Godsey – new hire, will begin January 2012

Shannon Kobs - new hire, will begin August 2011

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#### Affiliate Faculty to ISU Geosciences

#### Teki Sankey

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#### John Welhan

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#### Attachment 4 - ISU Geosciences Facilities & Equipment List

#### Pocatello Campus

Classrooms

6 standard classrooms with tables, built-in storage, and full AV equipment including ceiling-mounted LCD projectors 1 portable Tandberg Digital Television/Conferencing system for communication between ISU campuses and other universities

Collections

~500 drawers of curated minerals, rocks, and fossils

Petrographic microscopes

10 student microscopes

2 Research microscopes with cameras and monitors

1 Fluid inclusion microscope

Sample preparation facility

Saws, grinders, crushers, polishers

Vehicles

5 old 4x4 vehicles owned and maintained by department

10 late model 4x4 GMC Suburbans available for lease from ISU Motor Pool

LEG - Laboratory for Environmental Geochemistry (supervised by Mike McCurry)

Bruker D8 x-ray diffractometer

JY70C ICP-AES

Water sampling, pH and ISE probes Fusion muffle furnace CEM microwave digestion system 2 Fume hoods Anaytical balances WC puck and ring mill

CAMAS - Center for Archeology, Materials and Applied Spectroscopy (supervised by ISU Office of Research)

ThermoElectron Corporation Delta V Plus stable isotope ratio mass spectrometer

Thermo X series II Inductively Coupled Plasma Mass Spectrometer with Cetac liquid handler and New Wave UP 213 nm laser ablation device

FEI Quanta 200 FEG Environmental SEM with an integrated Bruker Quantax 200 SDD- Energy Dispersive X-ray Spectrometer

Surface Imaging Systems Atomic Force Microscope

500 MHz multi-user NMR spectrometer with remote access capability.

Surface Hydrology laboratory (supervised by Ben Crosby)

Acoustic Doppler Velocimeters/Profiler etc

Conodant extraction and analysis laboratory (supervised by Leif Tapanila)

Flume laboratory (Jointly supervised by ISU Civil Engineering and Geosciences). Operational beginning January 2012

Sediment Core Laboratory (supervised by Bruce Finney)

Walk-in cold room (1200 ft3)

Bartington whole-core and single-sample magnetic susceptibility instrumentation

Beckman-Coulter laser particle-size analyzer

UIC coulometric carbon analyzer for total and inorganic carbon determination

Petrographic and dissecting microscopes

Biogenic silica analysis system

High-capacity centrifuge

Wide array of core sampling, processing and archival tools and materials.

Inflatable coring platform and support craft, with toolkit of gravity, percussion, and piston coring devices

Digital Surveying equipment

Robotic total station

Survey-grade DGPS Rovers

GPS Base Station

Digital Mapping Laboratory – ISU Campus (supervised by Ben Crosby)

30 desktop workstations, each with dual monitors, 4 GB RAM, 320 GB storage, 1 Gbps intranet connectivity 2 servers, each with 4 TB storage capacity

1 Chas intropot connectivity on ISU community

1 Gbps intranet connectivity on ISU campus

155 Mbps internet connectivity via Internet II line to anywhere beyond ISU

5 laptop computers

14 GPS enabled PDAs 8 tablet PCs Many scanners, printers, one large-format plotter Software: Microsoft Office, ESRI ArcGIS, ENVI, Adobe CS, Vulcan, Matlab, Visual Basic 20 handheld GPS units GIS Training and Research Center - ISU Campus (supervised by Keith Weber) Enterprise GIS Server constellation (10 servers) 2 Instructional workstations 15 instructional desktop workstations, 4 GB RAM, 460GB storage, 1 Gbps intranet connectivity 8 Research desktop workstations, 2-8 GB RAM, 465-640 GB storage 6 other desktops workstations 5 laptop computers Multiple scanners, printers, plotters 10 handheld GPS receivers 1 Trimble ProXR Pathfinder Base Station GPS receiver, permanently mounted Large software library Even larger database library

### Meridian Campus

Boise Center Aerospace Laboratory (supervised by Nancy Glenn)
12 Workstations
Tandberg Digital Television/Conferencing system
Scanners, printers, large-format plotter
3-D immersive environment (IQ-Station)
2 GeoXT GPS
Multispectral hand-held camera
Field spectrometer
Terrestrial laser scanner (TLS) (INL joint appointment)
Software: ENVI/IDL, eCognition, ESRI ArcGIS, Trimble Pathfinder, Cyclone
Connection to IRON

<u>Idaho Falls Campus – CAES building</u> Geospatial Software Lab (supervised by Dan Ames)

### Lost River Field Station - north of Mackay, ID

Commercial kitchen Group workspace for 25 3 bathrooms w/showers Computer loft with internet connectivity 5 acres of surrounding property for trailers and tents

### State of Idaho Graduate Education in Geosciences Memorandum of Agreement

This Memorandum of Agreement, effective the \_\_\_\_\_ day of June, 2012, is entered into by Idaho State University (ISU), Boise State University (BSU), and University of Idaho (UI).

### I. Purpose

There is a great demand for geoscientists with advanced degrees to address the natural resource, water, and environmental needs of the state of Idaho. Despite a demonstrated need for graduate geoscience programs throughout the state of Idaho, the state has limited resources to provide graduate geoscience education. The three Idaho universities (ISU, BSU, UI) currently offer the M.S. Geology degree. BSU and UI also offer a Ph.D. in Geosciences, and ISU has proposed a new Ph.D. program in Geosciences. The intent of all three institutions is that the Ph.D. in Geosciences is a research-focused degree, designed to train earth scientists who can characterize the fundamental nature of earth processes and provide detailed interpretations of specific locations.

The Idaho State Board of Education has not assigned primary responsibility for geoscience education and training in the state of Idaho to a particular university; institutions are, however, directed to avoid duplication of programs where possible. ISU, BSU, and UI desire to avoid such duplication by establishing a collaborative administrative framework that will enable efficient sharing of educational resources among the institutions' respective geoscience graduate programs, including collaboration of Ph.D. educators in the state.

By entering into this agreement ISU, BSU, and UI express their support of a common vision and understanding of graduate geoscience education in Idaho and commit to work together to provide statewide access to quality graduate geoscience education.

### II. Agreement

To achieve the objectives set forth above, ISU, BSU and UI agree as follows:

- 1. ISU, BSU, and UI will work in concert to develop and maintain geoscience graduate programs that make use of existing disciplinary strengths while minimizing duplication of resources. Geoscience department chairs and graduate faculty from the three institutions will meet at least annually to discuss graduate education needs and requests for new or enhanced graduate geoscience programs. New course offerings related to graduate geoscience programs will be submitted with the institution's five-year plan in accordance with Idaho State Board of Education policy.
- 2. ISU, BSU, and UI agree to develop geoscience graduate courses to share among institutions. In most cases such courses will be delivered via video or web conferencing technology to all three campus locations.
- 3. As the common curricula are developed as set forth above, ISU, BSU, and UI will also develop agreements addressing administrative matters that may include, but will not be limited to, tuition, workload adjustment allocation, transfer credit, and other issues related to enrolled students or collaborative courses among institutions. Details will be facilitated by the associate deans, department chairs, and registrars of the three institutions.

- 4. ISU, BSU, and UI will make good faith effort to secure at their respective institutions graduate faculty status for the graduate geoscience faculty of all three institutions and will share faculty across the institutions to enhance availability of and access to faculty experts for teaching and research.
- 5. ISU, BSU, and UI will award Ph.D. degrees independently through their respective programs while collaborating, as specified in paragraph nos. 1 through 4 above, to avoid duplication and facilitate efficient use of resources.
- 6. ISU, BSU, and UI and their respective administrators, staff, and faculty will work jointly in good faith to address issues that may arise in the implementation of this agreement.
- III. Binding Effect

This Memorandum of Agreement is subject to any required approval of the Idaho State Board of Education and is binding on the institutions (ISU, BSU, and UI) only if such approval is obtained.

### IV. Modification

This Memorandum of Agreement may be modified by agreement of the institutions (ISU, BSU, and UI). To be binding, all such modifications must be in writing and signed by the Provost of each institution.

### V. Termination

Any of the institutions (ISU, BSU, or UI) may terminate this MOU at any time upon 90 days written notice to the Provosts of the other institutions.

IDAHO STATE UNIVERSITY

Bv:

Chair, Department of Geosciences

Bv: Dean of College

Bv Provost/Vice President for Academic Affairs

Date:

UNIVERSITY OF IDAHO

Bv:

Chair, Department of Geological Sciences

Bv: Dean By Presidenet Provost Date:

GEOSCIENCES GRADUATE EDUCATION MOU

BOISE STATE UNIVERSITY

Bv:

Chair, Department of Geosciences

By:

Dean of College

By: MErdun Provost/Vice President for Academic Affairs Date: 11/25/12



Dr. Dave Rodgers Associate Dean College of Science and Engineering Idaho State University 921 S. 8<sup>th</sup> Ave, Stop 8065 Pocatello, ID 83209-8065 rodgdavis@isu.edu

Dear Dr. Dave Rodgers,

The Department of Commerce wants to express our support for your desire to establish a PhD in Geosciences at Idaho State University. The Idaho Department of Commerce recognizes the importance of Idaho's natural resources, from timber, and silver, to water and geothermal power. Without these important industries and businesses Idaho would not have experienced the incredible success and growth throughout its history.

This PhD program will not only support businesses, but future workers in the state. This desire to serve the workforce needs in several high-wage, high growth industries in Idaho is commendable. This effort compliments our goal to increase the number of quality jobs, businesses and workers in Idaho. Increasing the volume of research and number of fellowships, as well as increasing the number of out of state students going to school in Idaho will prepare Idaho for the economy of the future.

Sincerely,

Allen

Gynii Gilliam Chief Economic Development Officer Idaho Department of Commerce

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# **IDAHO STATE UNIVERSITY**

# SUBJECT

Approval of Proposal for a new Ph.D. in Social and Environmental Dynamics

# APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.G. 4 and 5 and Section III.Z.

## BACKGROUND/DISCUSSION

Idaho State University (ISU) proposes to create a Ph.D. program in Social and Environmental Dynamics (SED) organized as an interdisciplinary program by faculty from the Departments of Anthropology, Biological Sciences, Economics, Geosciences, Political Science, History, Sociology, Chemistry, Business and Physics, and other faculty members from across the Idaho State University campus. An interdisciplinary Ph.D. program is needed at ISU that will allow students individualized research tracks that mix social, natural, and physical sciences in an integrated and systematic exploration of the role of humanity in the structure and functioning of the earth's natural, physical, and human systems.

While Idaho State University is at the forefront of many human-based sciences research initiatives, and has excelled in interdisciplinary research efforts integrating the social, natural, and physical sciences, there is no Ph.D. program at ISU for the advancement of education and research in human related fields and their intersection with the Natural and Physical Sciences (termed "Sustainability Science" by the National Science Foundation). Students confined by geography or employment to southeastern Idaho have no opportunity for advancement. Further, the Idaho National Laboratory is in need of an interdisciplinary social-physical science-based Ph.D. program for a number of their staff. More significantly, the interdisciplinary research currently being conducted at ISU is attracting MS students from around the globe, yet there is no opportunity for keeping them at ISU because of a lack of suitable programs. This program will further position ISU for the NSF Integrated Graduate Education and Research Training (IGERT) graduate program initiative and provides the foundation for a suite of new research, education, and training opportunities. This program will build on the successes of its faculty to increase university ties to government and industry partners.

The proposed program fits within Idaho State University's mission to advance scholarly and creative endeavors through the creation of new knowledge, cutting-edge research, innovative artistic pursuits and high quality academic instruction. It will also support the Board's mission and policy through offering a broad, interdisciplinary degree that will train Idaho students in the fundamental skills and knowledge necessary to become superior researchers and scientists. In addition, the program will provide the educational basis for entrepreneurial development in the Social and Environmental Dynamics fields within the state of Idaho.

# IMPACT

This is an interdisciplinary program with a faculty already positioned within their home departments, therefore, all faculty will be teaching regular courses in which SED students may be participating. Support will be provided with work-study, internship, and graduate assistant funding. The administration at ISU has committed five graduate assistantships to support the program.

# ATTACHMENTS

Attachment 1 –Proposal and external review for the Ph.D. inSocial and Environmental DynamicsPage 5Attachment 2 - Letters of SupportPage 43

# STAFF COMMENTS AND RECOMMENDATIONS

Idaho State University proposes to create a new interdisciplinary Ph.D. program in Social and Environmental Dynamics to be housed under the Graduate School. The proposed program was modeled after the Environmental Dynamics Ph.D. program offered at the University of Arkansas and the Environmental Studies Ph.D. program offered at Antioch University.

ISU has identified eleven students who are prepared to enter into this program from the local community, the Idaho National Laboratory, and the Fort Hall Reservation.

Consistent with Board Policy III.G., ISU's proposed Ph.D. in Social and Environmental Dynamics was reviewed by an external review panel consisting of Dr. John Dixon from the University of Arkansas and Dr. Stephen Mulkey, from the University of Idaho. The reviewers provided analysis regarding national/regional need for proposed program, curriculum, faculty workload, doctoral candidate support, adequacy of space/facilities, and administrative structure.

The reviewer panel felt the curriculum as outlined for the program was weak and did not address the "inherent contrast in the preparation of doctoral students from the social and natural sciences." They noted that the "proposed two-semester required seminar is pedagogically acceptable but the content is poorly enunciated and does not clearly contain the desired synthesis across disciplines." The panel felt that the curriculum for the proposed program can "overcome both of these deficits through a concerted effort at curriculum design that include players from the social and natural sciences."

The panel also felt that "overall institutional support for doctoral candidates was lacking and recommended program support in the form of staff and graduate

student space" and development of a reporting structure above the level of the College deans such as to the VP for Academic Affairs, the Dean of the Graduate School or possibly directly to the Provost".

The panel also commented on the teaching loads for current faculty involved in graduate education and felt it was "excessive for any graduate program" for fostering doctoral level research. Panel recommended "faculty integral to success be given reduced teaching assignments." This is especially necessary during the early years of the program.

When addressing the issue of duplication; the team indicated that while "similar programs exist at the University of Idaho and in nearby Utah, these institutions draw on largely separate clientele." Therefore, the team saw "little competitive overlap between the proposed program and existing programs."

ISU's proposed Ph.D. in Social and Environmental Dynamics was in the pipeline for review and was therefore, not added to their Five-Year Plan. Pursuant to III.Z, no institution has the Statewide Program Responsibility for interdisciplinary Environmental Science programs. Currently, the University of Idaho offers a Ph.D. in Environmental Science.

### **BOARD ACTION**

I move to approve the request by Idaho State University to offer a new interdisciplinary Ph.D. in Social and Environmental Dynamics.

Moved by \_\_\_\_\_ Seconded by \_\_\_\_\_ Carried Yes \_\_\_\_\_ No \_\_\_\_

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ATTACHMENT 1 Institution Tracking No. 2009-10

# IDAHO STATE BOARD OF EDUCATION ACADEMIC/PROFESSIONAL-TECHNICAL EDUCATION FULL PROPOSAL

Submitted by:

Idaho State University

Institution Submitting Proposal

Colleges of Arts and Letters, Science and Engineering, College of Business Multiple Departments and Units

Name of College, School, or Division

Name of Department(s) or Area(s)

A New, Expanded, or Off-Campus Instructional Program Leading to:

# Ph.D. in Social and Environmental Dynamics

CIP 03.0103 environmental studies

Degree/Certificate & 2010 CIP

Program Change, Off-Campus Component

1January 2012

Proposed Starting Date

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G. R. + Mul This proposal	as her previewed and	1 approved by:	
Pandite Julas - amer	9/27/20.	//	
College Dean (Institution)	Date		
Jones Pr. Ittle	tu ioka	111	
Chief Fiscal Officer (Institution)	Date	VP Research and/or Graduate Dean	Date
Barbara adamcik	10/5/11		A <sub>1</sub>
Chief Academic Officer (Institution)	Date	Chief Academic Officer (OSBE)	Date
anter Vaite 1	0/10/11		
President	Date	SBOE/OSBE Approval	Date

### 1. Describe the nature of the request.

Idaho State University proposes to create a Ph.D. program in Social and Environmental Dynamics (SED) organized as an interdisciplinary program by faculty from the Departments of Anthropology, Biological Sciences, Economics, Geosciences, Political Science, History, Sociology, Chemistry, Business and Physics, and other faculty members from across the Idaho State University campus.

As scientific understanding of the earth' s environments has increased over the past thirty years, it has become increasingly apparent that what we see in 'nature', with very few exceptions, is the result of a profound interaction between humans and environments in all parts of the globe. There is, in other words, no nature without culture, and humans have been major predators, harvesters, contributors, and engineers in virtually all ecosystems for millennia. This understanding has altered the parameters of scientific study, such that these interactions are now labeled Biocomplexity or Coupled Natural and Human Systems, which are new categories of National Science Foundation (NSF) funding and the scientific literature. The academy has been slow to take this new understanding into account in a systematic way because of older disciplinary boundaries and a traditionally received wisdom that has firmly separated culture from nature. While individual multidisciplinary projects are born every day, this growing field is generating an entirely new form of science such that a new disciplinary focus is required.

At the National Science Foundation, National Institutes of Health, National Oceanographic and Atmospheric Administration, National Aeronautics and Space Administration, Department of Energy and throughout the research infrastructure of the United States, there is an increasing emphasis on interdisciplinary research agendas and Idaho State University intends its students to be at the forefront of these emerging fields. State and Federal agencies are increasingly in need of broadly trained scientists who have skills across a range of disciplines. This is especially so at the interface of social and physical sciences. This is even truer in the consulting profession where scientists are regularly called upon to perform duties across a number of related disciplines. This approach is starting to penetrate academia as well where new interdisciplinary academic units are beginning to replace the more traditional departmental boundaries.

"Interdisciplinary studies may be defined as a process of answering a question, solving a problem, or addressing a topic that is too broad or complex to be dealt with adequately by a single discipline or profession . . . . [and] draws on disciplinary perspectives and integrates their insights [to produce] a more comprehensive perspective" (Klein and Newell 1997:393).<sup>1</sup>

While Idaho State University is at the forefront of many human-based sciences research initiatives, and has excelled in interdisciplinary research efforts integrating the social, natural, and physical sciences, there is no Ph.D. program at ISU for the advancement of education and research in human related fields and their intersection with the Natural and Physical Sciences (termed "Sustainability Science" by the National Science Foundation). Students confined by geography or employment to southeastern Idaho have no opportunity for advancement. Further, the Idaho National Laboratory is in need of an interdisciplinary social-physical science-based Ph.D. program for a number of their staff. More significantly, the interdisciplinary research currently being conducted at ISU is attracting MS students from around the globe, yet there is no opportunity for the NSF IGERT (Integrated Graduate Education and Research Training) graduate program initiative and provides the foundation for a suite of new research, education, and training opportunities.

An interdisciplinary Ph.D. program is needed at Idaho State University that will allow students

<sup>&</sup>lt;sup>1</sup> Klein, J. T. and Newell, W. H. 1997 Advancing Interdisciplinary Studies. *In Jerry B. Graff, James, L. Ratcliff and Associates (eds) Handbook of the Undergraduate Curriculum: A Comprehensive Guide to Purposes, Structures, Practices, and Change (pp 393-415).* San Francisco: Jossey-Bass Publishers.

individualized research tracks that mix social, natural, and physical sciences in an integrated and systematic exploration of the role of humanity in the structure and functioning of the earth's natural, physical, and human systems. Faculty from 11 departments spanning three colleges, and several facilities including the GIS Training and Research Center, the Idaho Accelerator Center, the Informatics Research Institute, the Idaho Museum of Natural History, and the Center for Archaeology, Materials, and Applied Spectroscopy, have in place the necessary faculty, facilities, and research interests to make such a program a success.

Faculty members from participating departments have identified eleven (11) students who are ready to enter this program from the local community, the Idaho National Laboratory, and the Fort Hall Reservation. The program will not need additional faculty support, due to the interdisciplinary structure of the program, and will receive infrastructural support from the Office of Academic Affairs, the Office of the President of ISU, and the academic Colleges. This program is critical to the mission and needs of ISU, the state, and the eastern Idaho community.

### 2. Quality.

The program will be coordinated by a Program Director who will chair a committee made up of members from each of the participating departments. This committee will be responsible for recommending students for admission, for course development, approval of graduate committee membership, and other duties to assess the quality of the program and to maintain continuous improvement. The committee's primary tasks will entail program rigor, and to maintain the strong, integrative interdisciplinarity of the mission because "Merely bringing the different disciplines together in some way but failing to engage in the hard work of integration is multidisciplinary studies, not interdisciplinary studies" (Repko 2007:133). For this program, "Interdisciplinarity means defying disciplinary limits on what theories, concepts, and methods are appropriate to a problem and being open to alternative methods of inquiry, using different disciplinary tools, and carefully estimating the degree of usefulness of one tool versus another to shed light on a problem" (Repko 2007:135).<sup>2</sup>

In this construct, the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine define interdisciplinary work in similar terms: "Interdisciplinary research (IDR) is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding or to solve problems whose solutions are beyond the scope of a single discipline or area of research" (National Academies 2005:39). The committee will coordinate education and research that is beyond, or unable to be achieved, by any one discipline.<sup>3</sup>

### Admission Criteria

1. Prospective students will enter the program with a MA or MS in one of the participating departments or a related interdisciplinary field, and should have a 3.5 or better graduate GPA on a 4.0 point scale. All applicants must meet ISU Graduate School admission requirements for doctoral programs. Prospective students will normally have GRE scores at the 50<sup>th</sup> percentile or above in all general testing areas. The GRE exam will have been taken in the last five years. Three letters of recommendation must be provided.

2. Prospective students may be admitted only if a member of the program agrees to be the major supervisor.

3. All recommendations for admission will be made by the steering committee. All approvals of

<sup>&</sup>lt;sup>2</sup> Repko, Allen F. 2007 Interdisciplinary Curriculum Design. *Academic Exchange Quarterly* Fall 2007:130-137.

<sup>&</sup>lt;sup>3</sup> National Academies of Science 2005. Facilitating Interdisciplinary Research. Washington DC: National Academies Press.

major professor will be made by the steering committee.

#### Curriculum

### Core Requirements

The faculty of the SED Ph.D. program envision this program as primarily a research degree with broad, interdisciplinary foci. As such, students will be required to take two core courses and then specialized courses to meet individual research requirements as determined by the student's integrated interdisciplinary research committee. Further coursework or projects may be assigned in consultation with the committee. Each participating department will create a new course number for the two core courses, and the student will take all core and research credits in the department numbers of his/her major advisor. All other course work will be in the offering department.

1. All students will participate in two core seminars their first year. This will be a two-semester seminar sequence in Integrated Social and Environmental Dynamics. The goal of this two-semester sequence is to create a common knowledge base, research core, and cohort for all students entering the program, regardless of individual specialty.

Since the external reviewers were adamant that the program, and courses, not be housed in any one department or college, the courses will be team taught by participating faculty. Module 1 will be taught by physical scientists, Module 2 by natural scientists, Module 3 by social scientists. The actual reading lists for each course will be based on the important literature at the time of the offering and will change every semester because the important topics in these fields change every year. The committee will have oversight.

The seminars will be done in modules, so that students from distant locations who might be fully employed in government or private industry may participate in the program. The courses will be done in five week sections where students do readings, short papers, and independent research collaborating on-line with the professor for five weeks, and then come to ISU for three intensive days of fieldwork, laboratory research, and/or seminars (perhaps on a Thursday, Friday, Saturday). For those in residence at ISU, this will be a novel addition to other courses in which they are enrolled. For those stationed away from ISU, this will provide three opportunities per semester for students to interact on campus with students and faculty in the first year.

The two courses will be organized as follows:

#### History of Global Change

Semester 1 Module 1: Physical processes and global change. Semester 1 Module 2: Global change, evolution, and life sciences. Semester 1 Module 3: Hunters, farmers, and early civilizations as agents of cultural and historical global changes.

#### Sustainability and Resilience in the Modern Global Environment

Semester 2 Module 1: Physical processes and modern global changes. Semester 2 Module 2: Biocomplexity, coupled human-natural systems, biodiversity. Semester 2 Module 3: Food security, energy development, health, and environment.

A total of 54 credits of coursework, which includes 6 credits of core seminars and a minimum of 30 credits of dissertation, must be completed for the Ph.D.

2. In the first semester, the student will formulate a research committee made up of a Principle Advisor and three other faculty. At least two of the committee members must be from disciplines other than that of the Principle Advisor, with at least one each from Social Sciences (including Business and Education), Natural Sciences (including Mathematics), and Physical Sciences (including Engineering). This committee will consult with the student while the student formulates a program of study. The student will be expected to maintain a 3.5 GPA in graduate coursework.

Four example Programs of Study are described below. All are quite different, one will require undergraduate prerequisite course work, the others will not. Students will have the option of any graduate level courses in any of the participating disciplines if approved by their graduate committee and if they meet the appropriate prerequisites.

Scenario 1: A student with strong undergraduate and master's degrees in one of the core disciplines, and extensive work experiences in State or Federal agencies, or in private industry, may pursue a pure research degree. Here the student would participate in the core seminars, but the remainder of their program may consist of independent study courses, independent research courses, and dissertation units.

Year 1: Fall 9 credits	Year 1: Spring 9 credits
66xx: Seminar in SED 3 credits	66xx: Seminar in SED 3 credits
66xx: Independent Research 3 credits	66xx: Independent Research 3 credits.
66xx: Independent Study 3 credits	66xx: Independent Study 3 credits
Year 2: Fall 6 credits	Year 2: Spring 6 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits
Year 3: Fall 6 credits	Year 3: Spring 6 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits
Year 4: Fall 6 credits	Year 4: Spring 6 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits

TOTAL = 54 credits

Scenario 2: A student with undergraduate and master's degrees in sociology or anthropology develops a research project to investigate wild and farmed salmon as commodity chains interconnecting circum-pacific countries and indigenous peoples in a global economy. Integrating Sociology, Anthropology, Economics, Ecology, and Geographic Information Systems, the student creates an entirely novel approach to understanding the production and spread of salmon throughout the Pacific region.

Year 1: Fall 9 credits	Year 1: Spring 9 credits
66xx: Seminar in SED 3 credits	66xx: Seminar in SED 3 credits
GEOL 5503 Principles of Geographical Information System 3 credits.	GEOL 5504 Advanced Geographic Information Systems 3 credits.
SOC 5591 Seminar in Environmental Sociology 3 credits.	ECON 5533 Economic Development 3 credits.
Year 2: Fall 9 credits	Year 2: Spring 9 credits
ANTH 5581: Development Anthropology 3 credits	GEOL 6628 Advanced GIS Programming 3 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits
Year 3: Fall 6 credits	Year 3: Spring 6 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits
Year 4: Fall 6 credits	Year 4: Spring 0 credits
88xx: dissertation research 6 credits	completed

TOTAL = 54 credits

Scenario 3: A student with any participating undergraduate and graduate degrees (but not in chemistry, for example), who plans to investigate the role of industrialization in spreading contaminants to indigenous foods in the arctic. This program, an **exceptional case of a student who chose to completely re-tool their education to pursue a specific PhD direction,** would require some undergraduate coursework but create an informed and socially aware approach to contaminant studies (While unlikely to occur, we wanted to show that it would certainly be possible for a student to do this).

Year 1: Fall 11 credits	Year 1: Spring 10 credits
66xx: Seminar in SED 3 credits	66xx: Seminar in SED 3 credits
CHEM 2232 Quantitative Analysis 2 credits.	CHEM 3302 Organic Chemistry II 3 credits.
CHEM 2234 Quantitative Analysis Laboratory 2 credits.	CHEM 3304 Organic Chemistry Laboratory II 1 credit
CHEM 3301 Organic Chemistry I 3 credits.	ANTH 5502: Ecological Anthropology 3 credits
CHEM 3303 Organic Chemistry Laboratory I	
Year 2: Fall 9 credits	Year 2: Spring 12 credits
CHEM 5535 Environmental Chemistry 2 credits.	BIOL 5532 Biochemistry 3 credits.
CHEM 5537 Environmental Chemistry Laboratory 1 credit.	POLS 5555 Environmental Politics and Policy 3 credits
BIOL 6687 Environmental Science and Pollutants 3 credits	88xx: dissertation research 6 credits
ANTH 5549 Methods and Techniques of Ethnographic Field Research 3 credits	
Year 3: Fall 9 credits	Year 3: Spring 6 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits
Year 4: Fall 6 credits	Year 4: Spring 6 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits

TOTAL: 54 Graduate, 12 undergraduate

Scenario 4: A student with a background in Geology, Physics, or Chemistry might seek new and important methods of materials analysis in archaeology, art, or museum curation. Combining archaeology with advanced materials analysis, including research at CAMAS and the Idaho Accelerator Center, a student develops a research topic that solves important social questions using state-of-the-art physical analysis. A student with an archaeology background and basic science education (introductory courses in chemistry, physics, and math), for example, could complete this same sequence with a year of background coursework.

Year 1: Fall 9 credits	Year 1: Spring 9 credits
66xx: Seminar in SED 3 credits	66xx: Seminar in SED 3 credits
GEOL 6625 Quantitative Geochemistry Lab 3 credits.	PHYS 5516 Introduction to Nuclear Measurements 3 credits.
ANTH 6635: Seminar in Archaeology 3 credits	ANTH 66xx: Archaeological Chemistry 3 credits
Year 2: Fall 10 credits	Year 2: Spring 9 credits
PHYS 6615 Neutron Activation Analysis 4 credits.	CHEM 6630 Advanced Analytical Chemistry 3 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits
Year 3: Fall 6 credits	Year 3: Spring 6 credits
88xx: dissertation research 6 credits	88xx: dissertation research 6 credits
Year 4: Fall 6 credits	Year 4: Spring 0 credits
88xx: dissertation research 6 credits	completed

TOTAL = 56 Units

3. During the second semester, the student will create a dissertation research proposal that will be presented in an open forum during the third semester. This presentation will be followed by a closed oral examination with the student's committee and other interested faculty.

4. The student will create an original dissertation based on primary research. The style and depth of the work will be determined in consultation with the committee.

5. The student will present a dissertation defense that will be presented in a public forum followed by a closed oral examination with the student's committee and other interested faculty.

**On-going assessment:** The proposed curriculum involves eleven departments and five research facilities. The unique composition of the program means that no specialized accreditation is available. The program will be evaluated according to a specific assessment plan, presented below, and the standard review process in place within all of the departments, centers, institutes, and facilities involved. Course evaluations, student exit interviews, student career placement, surveys of hiring institutions, and regular contact, formal and informal, with graduates will maintain the program's visibility and offer suggestions for course redesign. In addition to the program's own assessment plan, the program will go through the formal ISU assessment at Departmental, College, and University levels.

- 1.) Annual Assessment
  - a. Annual exit interviews will be conducted with graduating students.
  - b. The two-semester core seminar course in SED will be evaluated annually by a team comprised of the core faculty of the program. The goal of the two- semester core is to create a common knowledge base and research core for all students, regardless of academic background. Assessment tools will include entrance and exit surveys and systematic assessment of course materials.
  - 2.) Five-year Assessment
    - a. Every five years the program will be evaluated by an external review team comprised of program alumni, employers, and external constituencies, including representatives of government agencies (Bureau of Reclamation, Bureau of Land Management, Forest Service, Idaho Humanities Council, for example) and the Idaho National Laboratory.
- 3.) Long-term Assessment
  - a. A web-based tool will be developed to track program graduates and to compile

### statistical data about graduate placement.

External Review. See attached (complete report, Appendix 2).

### Summary of key findings.

- 1. The external reviewers found that 1) this program is needed at ISU and does not overlap with related but different programs at the University of Idaho and at Utah State University. The reviewers found 2) the faculty to be outstanding overall, and energetic, enthusiastic, and already engaged in interdisciplinary research. They found 3) the research infrastructure to be strong, and faculty granting to support Ph.D. research equally strong.
- 2. Reviewer concerns regarding curriculum have since been addressed.
- 3. The reviewers suggested that a central laboratory or other office facility be created to encourage graduate student interaction. There is a joint laboratory space available to students in the Idaho Museum of Natural History, and others on campus. Additional space may be procured based on the specific needs of enrolled students.
- 4. The external reviewers strongly suggested that the proposed program not be housed in any one department of college, as such, and following the standard set but the Environmental Studies graduate program at the University of Idaho, this program will be housed in the Graduate School.
- 5. Reviewers' concerns regarding faculty workload concerns have been addressed through university and college workload policies. The Chairs and Deans have agreed to accommodate the program because the benefits of the program will be felt throughout the participating departments. The Faculty committee involved in coordinating the program will meet only 2-3 times per semester and these meetings will be considered part of a faculty member's service requirement.
- 6. The reviewers recognized that this sort of program is difficult when there are no dedicated Graduate Assistantships to attract and support the best students. The ISU Administration has committed five graduate assistantships to support the program.

#### b. Faculty

The proposed SED program is an interdisciplinary program drawing on faculty on full-time appointments in departments across campus. This is a virtual department. Much like the Environmental Studies program at the University of Idaho with over 90 faculty as members from different Colleges and Departments forming a virtual program faculty, no ISU faculty will be assigned directly to the SED program. Workload for faculty will be as follows:

- 1. for most faculty at any one time, it will be 0 FTE.
- 2. for any faculty who chooses to supervise as principle adviser, 5% of total per student.
- 3. for any faculty who chooses to be part of a committee, 2% of total per student.

But as in every graduate committee, the actual expectations will be determined by the needs of the student and the research project.

Name	Department	Highest Degree	Specialty	Percent FTE for Proposed Program
David Peterson	Anthropology	PhD	Archaeology, Metallurgy, Central Asia	as needed
John Dudgeon	Anthropology	PhD	Bioanthropology, Archaeology, Chemistry, Polynesia	as needed
Richard Holmer	Anthropology	PhD	Archaeology, Great Basin, Materials, XRF	as needed
Ernest Lohse	Anthropology	PhD	Archaeology, Informatics, Paleoindian	as needed

Herbert Maschner	Anthropology	PhD	Archaeology, Biocomplexity, Western North America, Museums	as needed
Katherine Reedy- Maschner	Anthropology	PhD	Anthropology, Development, Fisheries, Ecological Anthropology, Alaska, Idaho	as needed
Chris Loether	Anthropology	PhD	Linguistics, Western North America, Shoshone	as needed
Elizabeth Cartwright	Anthropology	PhD	Medical Anthropology, Latin America, Idaho	as needed
Richard Hansen	Anthropology	PhD	Archaeology, Mesoamerica	as needed
Patricia Dean	Anthropology	PhD	Archaeology, ceramics, Great Basin	as needed
Paul Trawick	Anthropology	PhD	Water systems, ecology, land rights, agriculture	as needed
Bruce Finney	Biological Sciences	PhD	Paleoecology, stable isotope biogeochemistry, climate change	as needed
Rick Williams	Biological Sciences	PhD	Genetics and Evolutionary Ecology, Quantitative Genetics, Plant ecology	as needed
Rosemary Smith	Biological Sciences	PhD	Behavioral ecology, evolutionary biology, zoology	as needed
Kathleen Lohse	Biological Sciences	PhD	Watershed biogeochemistry, soil processes	as needed
Pete Sheriden	Biological Sciences	PhD	Microbial Molecular Biology, Emerging Infectious Diseases	as needed
Corey Schou	Business and Computer Science	PhD	Informatics, databases, web design, museums	as needed
David Beard	Business and Computer Science	PhD	Databases, data analysis	as needed
Byron Bennett	Chemistry	PhD	Organic/Inorganic Synthesis	as needed
Todd Davis	Chemistry	PhD	Organic Synthesis, Instrumental Analysis	as needed
Karl De Jesus	Chemistry	PhD	Organic Synthesis	as needed
Caryn Evilia	Chemistry	PhD	Biochemistry, Protein Chemistry	as needed
Lisa Goss	Chemistry	PhD	Physical Chemistry, Atmospheric and Radioisotope Chemistry	as needed
R. W. Holman	Chemistry	PhD	Mass Spectrometry, Organic and Computational Chemistry	as needed
John Kalivas	Chemistry	PhD	Analytical Chemistry, Chemometrics	as needed
Joshua Pak	Chemistry	PhD	Organic/Inorganic Synthesis, Materials Science	as needed
Rene Rodriguez	Chemistry	PhD	Physical Chemistry, Laser and Chemical Vapor Deposition	as needed
Jeffrey Rosentreter	Chemistry	PhD	Analytical Chemistry	as needed
Cindy Hill	Economics	PhD	Health Economics, Labor Economics, Environmental Economics, Economic Education	as needed
Scott Benson	Economics	PhD	Forecasting, Macroeconomic Theory, International Economics	as needed

Glenn Thackrey	Geosciences	PhD	Quaternary Geology, Climate Change	as needed
Leif Tapanila	Geosciences	PhD	Paleontology	as needed
Daniel Ames	Geosciences	PhD	Hydrogeology, Geotechnologies, Computer Modelling	as needed
Paul Link	Geosciences	PhD	Historical Geography, Regional Geology	as needed
Ben Crosby	Geosciences	PhD	Geomorphology, Polar surface processes, Climate Change	as needed
Sarah Hinman	History	PhD	Historical Geography, GIS, spatial methods,	as needed
Jack Owens	History	PhD	Spanish Empire, Historical GIS, Social Networks	as needed
Kevin Marsh	History	PhD	United States - West, Idaho, Environmental	as needed
Laura Woodworth- Nev	History	PhD	North American and Mountain West, Women, Native Americans	as needed
Stephanie Christelow	History	PhD	Anglo-Norman England	as needed
Dewayne Derryberry	Mathematics	PhD	Data analysis and statistical modeling	as needed
Leonid Hanin	Mathematics	PhD	Mathematical modeling, biostatistics	
Dan Dale	Physics	PhD	Medium-Energy & Applied Nuclear Physics	as needed
Frank Harmon	Physics	PhD	Applied nuclear physics	as needed
Alan Hunt	Physics	PhD	Applied nuclear physics	as needed
Phil Cole	Physics	PhD	Medium-Energy & Applied Nuclear Physics	as needed
Eddie Tartar	Physics	PhD	Nuclear physics	as needed
Tony Forest	Physics	Ph.D.	Intermediate Energy Experimental Nuclear Physics	as needed
Dustin McNulty	Physics	Ph.D.	Intermediate energy Experimental Nuclear Physics	as needed
Yoojung Kim	Physics	Ph. D.	Accelerator Physics	as needed
Steve Shropshire	Physics	PhD	Physics education and teacher training	as needed
Mark McBeth	Political Science	DA	Public Policy Analysis	as needed
Donna Lybecker	Political Science	PhD	Environmental Politics & Policy	as needed
Robert Forbis	Political Science	PhD	Environmental Law & Regulation	as needed
Juliet Carlisle	Political Science	PhD	Environmental and Energy Politics	as needed
James Newman	Political Science	PhD	State & Local Government, Water Resource Politics & Policy- proposed	as needed

Gesine Hearn	Sociology	PhD, RN	Sociology of Health and Illness; Medical Sociology; Qualitative Research methods;	as needed
Gregory Leavitt	Sociology	PhD	Social Institutions, Social Theory	as needed

No new faculty are required to run the programs.

c. Students matriculating into this program.

The student who will matriculate into this program will be a student with a BS/BA and a MS/MA degree in hand from one or more of the participating fields or related disciplines. Many of these students will be professionals already employed by Federal and State agencies, by private industry, or by NGOs. Some of these students will be ongoing graduate students currently in MA/MS programs at ISU or elsewhere. A third group will be academically focused young scholars intrigued by the integrative approached offered by this form of program.

d. Infrastructure support

**Staff Support:** will be reassigned with existing staff based on current needs.

Teaching Assistance: not needed.

Graduate Students: We have already identified 13 students who will enter the program in the first year.

**Library:** The library has sufficient resources to support the research needs of the program. Additional funds will be a reallocation from existing accounts.

**Equipment:** All of the laboratories currently accessible to students in Physics, Chemistry, Anthropology, Geosciences, Biological Sciences, and in other areas will also be accessible to the students in this program per individual faculty supervision.

### **Centers:**

- o Idaho Museum of Natural History and its laboratories and collections.
- o Idaho Accelerator Center and its laboratories and equipment.
- Center for Archaeology, Materials, and Applied Spectroscopy and its suite of mass spectrometers, scanning electron microscope, and other instruments.
- o Informatics Research Institute and its computing and database facilities.
- o GIS Training and Research Center and its instrumentation.
- e. Future plans discuss future plans for the expansion or off-campus delivery of the proposed program.

We have no plans to offer this program online.

#### 3. Duplication

In consultation with the University of Idaho, we have identified one thematic and research related program in the region. The Environmental Science Program, directed by Dr. Stephen Mulkey, is a virtual program much like the proposed program in Social and Environmental Dynamics, in that faculty from a suite of Departments participate in the curriculum. It is interdisciplinary and includes many of the research and education areas identified in this proposal. In consultation with Dr. Mulkey, and Dr. Margrit von Braun, former Dean of the College of Graduate Studies at the University of Idaho, we have recognized a number of areas of potential collaboration that will build on the strengths of each program, especially in regards to the research depth of the Natural Sciences programs at the University of Idaho and the interdisciplinary breadth of the Social Sciences programs at Idaho State University. Given our different strengths and emphases, we envision opportunities for research collaboration and the future exchange of students and scholars.

It is well known that when a PhD student, one who already has a Master's degree, chooses an institution for the PhD, that choice is almost never based on the University. Rather, a student chooses a PhD program for one of two primary reasons. The most common is an individual professor. Since this is a research degree, students seek out the particular faculty member, or group of faculty, who best represents their individual research interests. Second, a student chooses a university that is local; because for work, family, or other factors, the student cannot travel to another university. Thus, there is no opportunity for overlap because ISU will be drawing on a student population that is largely based in the southeast Idaho and thus, this constituency will not draw away from students who would normally attend the University of Idaho. Furthermore, the majority of students who come to this program will be coming to work with an individual faculty member, and until we have joint faculty between the universities, this creates no opportunity for competition. Serving a regional constituency while creating statewide research and educational collaborations will be a highlight of the proposed program.

#### 4. Centrality

The proposed program fits within Idaho State University's role as a Doctoral High Research university serving the needs of the region, State of Idaho, and western North America. It will support the SBOE's mission and policy through offering a broad, interdisciplinary degree that will train Idaho students in the fundamental skills and knowledge necessary to become superior researchers and scientists. The SED faculty has an unparalleled breadth of knowledge and research interests that will provide the SED Ph.D. student with a range of options in forming a core committee for research and education. Building on the core course sequence and a strong graduate committee, the incoming student, who will already have an MA or MS in one of the represented fields; may specialize in one or more of a variety of research areas by working with his/her advisor to create an individually tailored specialization area. Each student will create a Ph.D. committee that will include at least three different departments, ensuring the breadth necessary for such a program.

A sub-group of this faculty directly supports ISU's SBOE mandated health mission. In fields ranging from rural health, social aspects of contaminants and environmental degradation, medical anthropology, biochemistry, mass spectrometry, paleo-epidemiology, and a suite of other topics, students will be encouraged to investigate health related research that has a strong human and landscape component - all areas that fall under the rubric of social dynamics and biocomplexity.

### 5. Demand

a. The changing workforce needs of the State of Idaho and the western region of the United States dictate changing preparation for the professional worker. Positions in green and environmentally based industries are projected to increase within Idaho during the next five years. Idaho's Department of Labor reports that the number one "Hot Industry" for 2008-2018 is the Professional, Scientific, and Technical Services, the sector where SED graduates could expect to work, which is expected to add nearly 11,000 positions, a 32.92% increase.<sup>4</sup> In addition, Idaho's green economy, another potential job market for SED graduates, is expected to grow dramatically. Idaho's "greenest" industries are forecasted to add an additional 20,680 jobs, for an increase of 23%. Research and development in the Physical, Engineering and Life Sciences and administrative and general management green industry consulting positions—most of which require an advanced degree—are expected to add an additional 550 jobs in Idaho by 2018. Research and development professionals in green industry in Idaho earned \$92,800 per position on average in 2010.<sup>5</sup>

The initial assessment of the proposed Ph.D. program was a response to a number of INL staff who approached us seeking access to a Ph.D. program at ISU in the human-based sciences. At this point, a number of unstructured interviews were conducted by Dr. Maschner in order to assess local and regional demand. It took little effort to find over a dozen highly qualified prospective Ph.D. students in need of such a program. Further, recent successes in creating quality MS students funded through large external grants, and the recognition that those students would stay at ISU for the Ph.D. if a program existed, has spurred the creation of this proposal.

<sup>&</sup>lt;sup>4</sup> Idaho Department of Labor, "Idaho Hot Industries and Hot Jobs, 2008-2018," February 2011.

<sup>&</sup>lt;sup>5</sup> Idaho Department of Labor, "Idaho Green Projections and Economic Impact, 2011," pp. 3-4.

Demand for this program comes from three areas. The first is the Idaho National Laboratory, which has a number of scholars seeking terminal degrees in human-based sciences yet has no regional outlet for those researchers. We have identified two students from the INL that will enter the program upon its approval. The second source comes from the regional area, where we have identified another 9 students who will apply when this program is in place to further their careers in the eastern Idaho region (this includes three students from the Fort Hall Reservation). But an important source of students will come from outside of Idaho as increased external grant production attracts quality graduate students to Idaho State University. We have MA/MS students currently in place working on major grants that would stay at ISU if we had such a program, but currently must leave ISU to seek terminal degrees. Since the program does not overlap with any other programs at ISU, we do not anticipate that students will switch from existing programs to this one. Over the long-term, the State of Idaho will need advanced graduates with the skills that this program will create. These graduates will be at the forefront for solving some of the State's most pressing problems.

- b. Students. We have identified 11 students in eastern Idaho who will apply to this program when it is implemented. All are considered new enrollment. The highest demand will come from the INL, Federal agencies such as the BLM and Forest Service, Ft. Hall Reservation, private contractors and environmental firms, and students who for various reasons cannot leave SE Idaho.
  - c. Expansion or extension. Not applicable.

### 6. **Resources** – fiscal impact and budget

#### I. PLANNED STUDENT ENROLLMENT

	FY	13		FY 14	1	FY	15
	FTE	Headcount	]	FTE F	Ieadcount	FTE	Headcount
A. New enrollments	11	11	1	.818	3	26	26
B. Shifting enrollments	0	0	(	) 0		0	0
BUDGET		2013	2014	2015	Three Year Total	l	
Work Study office assistant, 15 h \$10 per hour. \$4.00 / hr cost to	ours/week, program.	\$4,160	<b>\$4,1</b> 60	\$0	\$8,320	)	
benefits @ 8.9%		\$370	\$370	<b>\$</b> 0	\$740	)	
.5 Office Specialist 1**		<b>\$</b> 0	\$0	\$9,000	\$9,000	)	
benefits @ 40%		<b>\$</b> 0	\$0	\$3,600	\$3,600	)	
Office operating (from Academi	c Affairs)	\$2,000	\$2,000	\$2,000	\$6,000	)	
Library (from Museum allocation	ı)	\$1,500	\$1,500	\$1,500	\$4,500	)	
GRAND TOTAL		\$8,030	\$8,030	\$16,100	\$32,160	)	
PROJECTED TUITION RE	VENUE	2013	2014	2015	Three Year Total	l	
In State Students Full Time (\$39 semester)	24 /	11	16	22	49	)	
In State Revenue (\$7848 each)		\$86,328	\$125,568	\$172,656	\$384,552	2	
Out of State Students (\$9174 / s	emester)	0	2	4	6	)	
Out of State Revenue (\$18348 ea	uch)	<b>\$</b> 0	\$36,696	\$73,392	\$110,088	;	
TOTAL		\$86,328	\$162,264	\$246,048	\$494,640	)	
PROJECTED DIRECT PRO REVENUE	GRAM	2013	2014	2015	Three Year Total	l	
Students Full Time		11	18	26	55	5	
Project Annual Credit Hours		198	324	468	990	)	

We have identified 11 students who will apply to the program in the first year. \*\*Graduate assistant support will be provided to the program from existing GA resources. If warranted by enrollment, additional office support will be provided from reallocation during 2015.

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#### II. EXPENDITURES

		FY 2	FY 2013		FY <u>2014</u>		FY <u>2015</u>	
		FTE	Cost	FTE	Cost	FTE	Cost	
A. Pe	rsonnel Costs			,				
1. I	Faculty	0	0	0	0	0	0	
2. /	Administrators	0	0	0	0	0	0	
3. /	Adjunct faculty	0	0	0	0	0	0	
4. <b>(</b>	Graduate/instructional assistants(based on \$12524.80	5	65000	5	65000	5	65000	
5.1	Research personnel	0	0	0	0	0	0	
6.5	Support personnel	0	0	0	0	.5	9000	
7. I	Fringe benefits	0	370	0	370	0	3600	
8.0	Other: workstudy	.5	4160	.5	4160	0	0	
	Total FTE Personnel And Costs;	.5	69530	.5	69530	.5	77600	
		FY	2013	]	FY <u>2014</u>		FY <u>2015</u>	
B. Of	perating expenditures							
1.	Travel		0		0		0	
2.	Professional services		0		0		0	
3.	Other services		0		0		0	
4.	Communications		500		500		500	
5.	Utilities		0		0		0	
6.	Materials & supplies		1000		1000		1000	
7.	Rentals		0		0		0	
8.	Repairs & maintenance		0		0		0	
9.	Materials & goods for manufacture & resale		0		0		0	
10.	Miscellaneous		0		0		0	
	Total Operating Expenditures:		1500		1500		1500	

	FY 2013	FY 2014	FY 2015
C. Capital Outlay			
1. Library resources	1500	1500	1500
2. Equipment	500	500	500
Total Capital Outlay:	2000	2000	2000
D. Physical facilities			
Construction or major Renovation	0	0	0
E. Indirect costs (overhead)	0	0	0
GRAND TOTAL EXPENDITURES:	73030	73030	81100
III. REVENUES	FY <u>2013</u>	FY _2014_	FY <u>2015</u>
A. Source of funds			
1. Appropriated funds	0	0	0
	0	0	0
2. Appropriated funds New – MCO	0	0	0
3. Federal funds	0	0	0
4. Other grants	0	0	0
5. Fees	0	0	0
6. Other:	0	0	0
GRANT TOTAL REVENUES:	0	0	0
	FY 2013	FY 2014	FY 2015
B. Nature of Funds			
1. Recurring*	73030	73030	81100
2. Non-recurring**	0	0	0
GRANT TOTAL REVENUES:	73030	73030	81100

\* Recurring is defined as ongoing operating budget for the program which will become part of the base.

\*\* Non-recurring is defined as one-time funding in a fiscal year and not part of the base.
#### a. Faculty and Staff Expenditures

Project for the first three years of the program, the credit hours to be generated by each faculty member (full-time and part-time), graduate assistant, and other instructional personnel. Also indicate salaries. After total student credit hours, convert to an FTE student basis. Please provide totals for each of the three years presented. Salaries and FTE students should reflect amounts shown on budget schedule.

		FTE		Projected
Name,	Annual	Assignment	Program	Student
Position,	Salary FTE	to this	Salary	Credit
And Rank	Rate	Program	Dollars	Hours
	Students			

As this is a virtual department with a faculty already positioned within their home departments, all faculty will be teaching regular courses in their home departments in which SED students may be participating. The two courses required for all SED students will be taught by at least six faculty a year each participating at the level of 1.0 or less credit per year as negotiated with their individual department Chairs and Deans.

Project the need and cost for support personnel and any other personnel expenditures for the first three years of the program.

Support will be provided with work study, internship, and graduate assistant funding.

#### b. Administrative Expenditures

Describe the proposed administrative structure necessary to ensure program success and the cost of that support. Include a statement concerning the involvement of other departments, colleges, or other institutions and the estimated cost of their involvement in the proposed program.

Name,	Annual	FTE Assignment	Program	Percent of
Position,	Salary	to this	Salary	Salary Dollars
And Rank	Rate	Program	Dollars	to Program

The SED program will have a Director who will be responsible for administrating the program. The Director, as in any program, works with an Administrative Assistant to Chair meetings of the program committee, coordinate review of applications, and other normal duties associated with degree programs. Each college Dean has committed to a two course release for the administrator should that administrator be from their college. The Director will be supported by a SED committee made up of representatives from the participating departments. The Director position will rotate among the colleges. This will be a .3 FTE Director position.

The administration at ISU has committed five graduate assistantships to support the program.

c. Operating Expenditures (travel, professional services, etc.) Briefly explain the need and cost for operating expenditures.

Modest budgets for communications and materials have been included to cover minor administrative needs of the program.

- d. Capital Outlay
  - (1) Library resources

(a) Evaluate library resources, including personnel and space. Are they adequate for the operation of the present program? If not, explain the action necessary to ensure program success.

#### The library resources are adequate.

(b) Indicate the costs for the proposed program including personnel, space, equipment, monographs, journals, and materials required for the program.

# \$1500 from the IMNH library allocation will support the program from journals.

(c) For off-campus programs, clearly indicate how the library resources are to be provided.

#### Not applicable.

(2) Equipment/Instruments

Describe he need for any laboratory instruments, computer(s), or other equipment. List equipment, which is presently available and any equipment (and cost) which must be obtained to support the proposed program.

Dozens of instruments in the Departments of Chemistry, Physics, Biological Sciences, Geosciences, Anthropology, and the various participating centers provide all necessary instruments to support the proposed program. A small equipment budget has been included to address graduate support and/or work study needs.

- e. Revenue Sources
  - (1) If funding is to come from the reallocation of existing state appropriated funds, please indicate the sources of the reallocation. What impact will the reallocation of funds in support of the program have on other programs?

#### There will be no impact on other programs.

(2) If an above Maintenance of Current Operations (MCO) appropriation is required to fund the program, indicate when the institution plans to include the program in the legislative budget request.

#### None required.

(2) Describe the federal grant, other grant(s), special fee arrangements, or contract(s) to fund the program. What does the institution propose to do with the program upon termination of those funds?

#### Not applicable.

Appendix 1: Courses Available to SED Students.

ANTH 5501 History and Theory of Socio-cultural Anthropology 3 credits. Survey of the development of anthropology, various schools of thought, important personalities, and concepts that have contributed to anthropology over time. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5502 Ecological Anthropology 3 credits. Interaction of human bio-cultural systems and environment. Relations of natural resources, technological inventories, social organization, cultural categories. Native resource management practices. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5503 Method and Theory in Archaeology 3 credits. History of the development of current methods and theory in archaeology and contemporary applications. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5504 Material Culture Analysis 3 credits.** Method and analyses used in archaeology and anthropology to understand the relationship between objects and culture. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5505 Analytical Techniques Laboratory 1 credit**. Analytical techniques laboratory to accompany ANTH 5504. Students will complete an assigned project in material culture analysis. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5506 American Indian Health Issues 3 credits.** An overview of health concerns, both current and past, of American Indian people, and the biological and sociocultural factors which influence health status. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5507 Anthropology of Global Health 3 credits**. How cultures define health and illness, and how these definitions ultimately influence the health status of individuals. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5508 Special Topics in Medical Anthropology 3 credits. Rotating topics, including international health issues, ethnopsychiatry, ethno-medicine and non-western healing systems. May be repeated for a maximum of 6 credits. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5509 Clinical Medical Anthropology 3 credits. Explores the culture of biomedicine and the beliefs of patients. Topics include doctor/patient communication, cultural competency, cultural construction of risk, critiques of high-tech medicine and the international pharmaceutical industry.

ANTH 5510 Introduction to Cultural Resources Management 3 credits. Introduction to CRM reviewing historic preservation and federal legislation as they pertain to archaeology; practical experience in site survey and recording. PREREQ: PERMISSION OF - INSTRUCTOR.

ANTH 5513 Old World Archaeology 3 credits. Prehistory of the Old World. Precise areal focus and periods may vary. Includes both theory and exposition. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5514 New World Archaeology 3 credits**. Examination of the prehistory of the Americas with emphasis on the North American Continent. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5530 Human Origins and Diversity 3 credits. Examines human origins, adaptations and biological diversity within the context of evolutionary processes. Primate lineage will be investigated. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5532 Human Osteology 3 credits. Provides a working knowledge of skeletal anatomy, primarily focusing on identification of individual bones. Other topics include: osteogenesis, pathologies and applications of knowledge and technique. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5539 Principles of Taphonomy 3 credits. Effects of processes which modify organisms between death and the time the usually fossilized remains are studied. Emphasis on vertebrates. Cross-listed with BIOL 5539 and GEOL 5539. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5549 Methods and Techniques of Ethnographic Field Research 3 credits**. Participant observation, field notes, data types, analytical procedures, interviewing skills, oral history, report writing. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5550 Introduction to Sociolinguistics 3 credits.** Study of the patterned covariation of language and society, social dialects and social styles in language; problems of bilingualism, multilingualism, creoles and language uses. Cross-listed as ENGL 5588. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5555 Introduction to Phonetics 3 credits**. Introduction to descriptive linguistics focusing on phonetics and phonetic phenomena of English and the other languages of the world. Extensive practice in perception and production of such phenomena. Cross-listed as LANG 5555.

**ANTH 5556 Introduction to Phonology and Morphology 3 credits**. Phonological theory and analysis; current theories in morphology. Phonological rules, representations, underlying forms, derivation, justification of phonological analyses; morphological structure, derivational and inflectional morphology; relation of morphology to phonology. Cross-listed as LANG 5556.

**ANTH 5558 Historical Linguistics 3 credits.** The methods and theories of the historical study of language. The comparative method, internal reconstruction, linguistic change over time, genetic typology of languages, and applications to prehistory.

**ANTH 5559 Linguistic Field Methods 3 credits.** Practical experience in linguistic analysis of a language using data elicited from a native speaker. May be repeated up to 6 credits. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5563 Applied Statistics in Anthropology 3 credits.** Practical applications of commonly used statistical analyses in anthropology. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5564 Advanced Analytical Methods in Anthropology 3 credits. Examination and practical experience in applying advanced quantitative and qualitative methods and analyses in anthropological research.

ANTH 5572 Native American Arts 3 credits. Survey of Native American arts and industries, including prehistoric, ethnographic, and contemporary venues. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5574 Special Topics in Indian Education 3 credits**. Rotating review of topics dealing with issues in Indian education. Consult current schedule of classes for exact course being taught. May be repeated.

ANTH 5578 Federal Indian Law 3 credits. Examination of tribal governments; their relationship with the federal government; sovereignty, jurisdictional conflicts over land and resources; and economic development. Cross-listed as POLS 5578.

**ANTH 5579 Tribal Governments 3 credits.** Complex legal position of Indian tribes as self-governing entities; principles of inherent powers; governmental organization, lawmaking, justice, relation to state and federal government. Cross-listed as POLS 5579.

ANTH 5580 Varieties of American English 3 credits. In-depth study of various dialects of American English, including historical evolution of different dialects, effects of migration on dialects, and influences of non-English immigrant languages on development of American English. Field work studying the Snake River dialects of Idaho. Cross-listed as ENGL 5580.

ANTH 5581 Specializations in Anthropology 3 credits. Rotating specialized topics such as applied anthropology, proxemics, ethnology, religion, international development. See current class schedule for titles. May be repeated up to 6 credits. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5582 Independent Problems in Anthropology 1-3 credits**. Investigation of an anthropological problem chosen by the student and approved by the staff. May be repeated up to 6 credits.

**ANTH 5583 Field Research 3 credits.** Practical experience in field research. May be repeated for up to 6 credits. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5585 Anthropology of War and Violence 3 credits**. Survey of war and violence from evolutionary foundations through modern representations. The course covers violence and war among chimpanzees, the genetics and biochemistry of violence, the role of evolution in making humans aggressive, and the history and ethnography of violent conflict around the world.

**ANTH 5586 Archaeology Field School 1-9 credits**. Practical field and laboratory training in archaeological excavation techniques and methods of analysis. May be repeated to a total of 9 credits. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5587 Ethnographic Field School 1-6 credits. Supervised fieldwork in cultural anthropology in a given ethnographic setting where students and faculty work on a specific set of field problems. May be repeated to a total of 6 credits. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5591 Archaeology Laboratory Analysis 3 credits**. Directed analysis of archaeological remains and report writing. May be repeated up to 6 credits. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 5594 Visual Anthropology 3 credits**. Documentary and ethnographic filmmaking techniques including story structure, interviewing, audio and lighting, camera handling, composition, POV, and editing. Anthropological critiques of visual representation. Students create their own short film for a final project. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 5595 Department Colloquium 1 credit. Presentations of current research issues in Anthropology by faculty and students. May be repeated.

**ANTH 5597 Professional Education Development Topics. Variable credit**. A course for practicing professionals aimed at the development and improvement of skills. May not be applied to graduate degrees. May be repeated. May be graded S/U.

ANTH 6605 Seminar in Linguistic Anthropology 3 credits. Discussion of theories, methods, and results in linguistic anthropology. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 6610 Seminar in Medical Anthropology 3 credits. Discussion of current topics within the various specializations of medical anthropology. PREREQ: PERMISSION OF INSTRUCTOR.

ANTH 6615 Seminar in Biological Anthropology 3 credits. Discussion of theories, methods, and results in biological anthropology.

PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 6625 Seminar in Sociocultural Anthropology 3 credits.** Discussions of theories, methods, and results in sociocultural anthropology. PREREQ: PERMISSION OF INSTRUCTOR.

**ANTH 6635 Seminar in Archaeology 3 credits**. Studies in current theories, methods, and results in archaeological anthropology. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5504 Plant Physiology 4 credits**. Study of plant physiological processes including water relations, mineral nutrition, - photosynthesis, respiration, translocation of photosynthate, secondary compounds and phytohormones. PREREQ: BIOL 1101 AND BIOL 1102, AND ONE YEAR OF COLLEGE CHEMISTRY.

BIOL 5505 Plant Form and Function 3 credits. Integrated studies of anatomical and physiological adaptations of plants to their natural environment. Data collection and analysis will be emphasized. PREREQ: BIOL 102 OR BIOL 2203. COREQ: BIOL 5505L.

BIOL 5505L Plant Form and Function Lab 0 credits. Assignments to apply principles from BIOL 5505. COREQ: BIOL 5505.

**BIOL 5506 Plant Diversity and Evolution 4 credits**. Study of the reproduction, structure, development, evolution, and classification of the fungi, algae, bryophytes, and vascular plants. Lectures, laboratories. PREREQ: BIOL 1101 AND BIOL 1102. COREQ: BIOL 5506L.

BIOL 5506L Plant Diversity and Evolution 0 credits. Assignments to apply principles from BIOL 5506. COREQ: BIOL 5506

**BIOL 5508 Plant Ecology 3 credits**. Major factors limiting plant growth and distribution with emphasis on adaptation and response at the individual, population, and community levels. PREREQ: BIOL 1101 AND BIOL 1102. COREQ: BIOL 5508L.

BIOL 5508L Plant Ecology Lab 0 credits. Assignments to apply principles from BIOL 5508. COREQ: BIOL 5508.

**BIOL 5512 Systematic Botany 4 credits**. Study of classification and evolution of flowering plants; techniques of phylogeny reconstruction based on molecular and morphological characters. Collection/identification of local flora. Field trips. PREREQ: BIOL 1101 AND BIOL 1102. COREQ: BIOL 5512L.

BIOL 5512 Systematic Botany Lab 0 credits. Assignments to apply principles from BIOL 5512. COREQ: BIOL 5512.

**BIOL 5515 Human Neurobiology 4 credits**. Cellular-to-organismal structure and function of the human central nervous system (CNS), and CNS pathologies. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5515L Human Neurobiology Lab 1 credit**. Detailed examination of the gross anatomy and pathways of the human central nervous system. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5516 Population/Community Ecology 4 credits**. Introduces quantitative analysis of populations and communities, emphasizing demography, distribution, abundance, spatial and temporal dynamics, biodiversity, coexistence, and applications to conservation and land use decision-making. Includes data collection and analysis. PREREQ: BIOL 2209. COREQ: BIOL 5516L.

BIOL 5516L 0 credits. Assignments to apply principles from BIOL 5516. COREQ: BIOL 5516.

**BIOL 5517 Organic Evolution 3 credits**. An integrated study of evolution as a unifying concept in biology. An examination of patterns and processes that affect the origin and diversification of species through time. PREREQ: BIOL 3358.

**BIOL 5518 Ecological Topics 1 credit.** Flexible use of seminars, lectures, and laboratory/field work dealing with current issues in ecology. Topic/emphasis varies. May be repeated until a maximum of 3 credits is earned. PREREQ: BIOL 2209 OR PERMISSION OF INSTRUCTOR.

**BIOL 5519 Mammalian Histology 4 credits**. Study of human animal tissues, including structural and functional characteristics of tissues and organs. PREREQ: BIOL 2206, BIOL 2207, OR BIOL 3303 OR BIOL 3301 AND BIOL 3302. COREQ: BIOL 5519L.

BIOL 5519L Mammalian Histology 0 credits. Assignments to apply principles from BIOL 5519. COREQ: BIOL 5519.

**BIOL 5520 Musculo-Skeletal Anatomy 2 credits**. Study of human body structure emphasizing muscular system and its relationship to axial and appendicular skeleton. Focus on extremities, thorax, and pelvis with applications toward normal, diseased and rehabilitative functions. PREREQ: BIOL 3301 AND BIOL 3302.

**BIOL 5523 General Parasitology 3 credits**. Study of the parasitic symBIOLes of animals, plants and other organisms focusing on concepts, principles, and consequences of such interactions and the coevolutionary processes by which they are created. PREREQ: BIOL 1101 AND BIOL 1102.

**BIOL 5526 Herpetology 3 credits**. The biology of amphibians and reptiles: lecture topics include evolutionary history, functional morphology, physiological ecology, biogeography, reproductive, and population ecology. Laboratories and field trips cover systematic, natural history, and collecting/sampling techniques. PREREQ: BIOL 2209. COREQ: BIOL 5526L.

BIOL 5526L Herpetology 0 credits. Assignments to apply principles from BIOL 5526. COREQ: BIOL 5526.

**BIOL 5527 Ichthyology 3 credits**. The biology of fishes; lecture topics include evolutionary history, functional morphology, physiological ecology, and biogeography. Laboratory and weekend field trips cover identification, life history and collecting techniques. Emphasis on Idaho species. PREREQ: BIOL 2209. COREQ: BIOL 5527L.

BIOL 5527L Ichthyology Lab 0 Credits. Assignments to apply principles from BIOL 5527. COREQ: BIOL 5527.

**BIOL 5531 General Entomology 3 credits**. Study of structure, development, classification, and life histories of insects, including ecological, economic and management considerations. An insect collection may be required. Field trips. PREREQ: BIOL 101 AND BIOL 102. COREQ: BIOL 5531L.

BIOL 5531L General Entomology Lab 0 credits. Assignments to apply principles from BIOL 5531. COREQ: BIOL 5531.

**BIOL 5532 Biochemistry 3 credits**. Comprehensive discussion/presentation of structure, function and metabolism of biological macromolecules and their constituents, including energetics, regulation, and molecular biology, with emphasis on critical analysis of biochemical issues PREREQ: Organic Chemistry or Introduction to Biology OR PERMISSION OF INSTRUCTOR.

**BIOL 5533 Microbial Physiology 3 credits**. Comparative physiology of microorganisms, including structure//function, metabolic diversity, enzyme mechanisms of microbial metabolism, and physiology of extreme organisms. Lectures, Class Exercises. PREREQ: Microbiology OR PERMISSION OF INSTRUCTOR. COREQ: BIOL 5533L.

**BIOL 5533L Microbial Physiology Lab 1 credit**. Laboratory exercises in comparative physiology of microorganisms. COREQ: BIOL 5533.

**BIOL 5534 Microbial Diversity 3 credits**. Enrichment, cultivation, and isolation of prokaryotes from various metabolic groups and environments. Microorganisms will be identified using classical microbial techniques and modern molecular methodologies. PREREQ: Microbiology and BIOL 5533 OR PERMISSION OF INSTRUCTOR. COREQ: BIOL 5534L.

BIOL 5534L Microbial Diversity Lab 1 credit. Enrichment, cultivation and isolation of prokaryotes from various metabolic groups and environments. COREQ: BIOL 5534.

**BIOL 5535 Vertebrate Paleontology 4 credits**. Phylogenetic history of the vertebrates outlined in the light of morphology, classification, evolution, paleoecology, and the significance of fossils. Field trips. Cross-listed as GEOL 5535. PREREQ: GEOL 5531 OR BIOL 3314 OR EQUIVALENT.

**BIOL 5538 Ornithology 3 credits.** Study of the origin, evolution, structure, habits, adaptations, distribution, and classification of birds. Field trips. PREREQ: BIOL 1101 AND BIOL 1102.

**BIOL 5539 Principles of Taphonomy 3 credits**. Effects of processes which modify organisms between death and the time the usually fossilized remains are studied. Emphasis on vertebrates. Cross-listed with ANTH 5539 and GEOL 5539. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5540 Human Gross Anatomy 4 credits**. Comprehensive regional study of gross human anatomy with emphasis on the upper limb, thorax, abdomen, pelvis and perineum. Designed for the first year dental students and complements BIOL 5550. Lecture and - laboratory. COREQ: BIOL 5540L.

BIOL 5540L Human Gross Anatomy 0 credits. Assignments to apply principles from BIOL 5540. COREQ: BIOL 5540.

**BIOL 5541 Mammalogy 3 credits**. General study of mammals including classification, identification, habits, ecology, economics, and techniques of study, with emphasis on North American forms. Field trips. PREREQ: BIOL 2209. COREQ: BIOL 5541L.

BIOL 5541L Mammalogy Lab 0 credits. Assignments to apply principles from BIOL 5541. COREQ: 5541.

**BIOL 5542 Plant and Animal Interactions 3 credits**. Coevolution of plant and animal form and function emphasizing pollination, herbivory, parasitism, frugivory/seed dispersal, and optimal foraging.

**BIOL 5543 Endocrinology 3 credits.** Study of the anatomy and physiology of the ductless glands and the properties and uses of natural and synthetic hormones. PREREQ: BIOL 3303.

**BIOL 5545 Biochemistry I 3 credits**. Introduction to basic aspects of biochemical systems, including fundamental chemical and physical properties of biomolecules. Enzymology including allosterism, metabolic regulation, bioenergetics, and carbohydrate metabolism. PREREQ: Introduction to Biology and Organic Chemistry OR PERMISSION OF INSTRUCTOR.

**BIOL 5546 Selected Topics in Physiology 1 credit**. Selected topics in physiology for dental students: blood coagulationcomplement-kinin systems, prostaglandin and related substances, vitamins, steroids, mucopolysaccharides, collagen and other extracellular matrix molecules and cyto-and molecular genetics.

BIOL 5547 Biochemistry II 3 credits. Functional continuation of 5545. Lipid, amino acid and nucleotide metabolism. Emphasis is

on metabolic regulation, metabolic dysfunction, biochemical mechanism of hormone action, biochemical genetics, protein synthesis, and metabolic consequences of genetic defects. PREREQ: BIOL/CHEM 5545.

**BIOL 5548 Advanced Experimental Biochemistry 2 credits.** Advanced laboratory projects designed to emphasize techniques of qualitative and quantitative biochemical analysis. PREREQ: BIOL 5537/CHEM 5538. COREQ: BIOL/CHEM 5547.

**BIOL 5549 Human Physiology I 4 credits**. First of a two-course sequence. Physiology of the nervous, muscular, circulatory, respiratory, and excretory systems. PREREQ: BIOL 2202; CHEM 1111, CHEM L1111, CHEM 1112, CHEM L1112; COREQ: BIOL 5525.

**BIOL 5551 Immunology 3 credits.** Fundamental concepts of antibody-mediated and cell-mediated mechanisms of immunity. In-vivo and in-vitro antigen-antibody interactions are discussed. PREREQ: Microbiology OR PERMISSION OF INSTRUCTOR.

BIOL 5551L Immunology Laboratory 1 credit. Selected laboratory experiments to accompany BIOL 5551 Immunology. PREREQ OR COREQ: BIOL 5551. OPEN TO NON-MAJORS BY SPECIAL PERMISSION.

**BIOL 5554 Advanced Immunology 3 credits**. Detailed study of selected areas of immunobiology. Course content will vary with current demand. Students will lead discussions and present current literature. PREREQ: BIOL 5551 AND PERMISSION OF INSTRUCTOR. COREQ: BIOL 5554L.

**BIOL 5555 Pathogenic Microbiology 3 credits**. How the medically important bacteria, viruses and fungi interact with the host to produce disease, including microbe characteristics, pathogenesis, pathological processes, prevention, and treatment methods. PREREQ: Microbiology OR PERMISSION OF INSTRUCTOR.

BIOL 5555L Pathogenic Microbiology Laboratory 2 credits. Will emphasize procedures for the isolation and identification of pathogenic bacteria. Clinical specimens will be provided for use in identification of unknowns. PREREQ OR COREQ: BIOL 5555.

**BIOL 5556 Human Physiology II 4 credits**. Physiology of gastrointestinal, endocrine, and reproductive systems. Includes studies of acid-base balance, peripheral circulation, shock, and temperature regulation. PREREQ: BIOL 5549 OR EQUIVALENT.

**BIOL 5559 Fish Ecology 3 credits**. Study of the behavior, habitat use, population dynamics, and management of freshwater fishes, especially salmon and trout. Laboratory and weekend field trips emphasize sampling techniques and data analysis. PREREQ: BIOL 2209, BIOL 3315, BIOL 5527.

BIOL 5559L Fish Ecology Lab 0 credits. Assignments to apply principles from BIOL 5559.

**BIOL 5560 Neuroscience 4 credits**. Comprehensive presentation of the anatomy of the central nervous system, the brain and spinal cord. Combined lecture and laboratory demonstration. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5560L Neuroscience Lab 1 credits.** Detailed examination of the gross anatomy and pathways of the human central nervous system. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5561 Advanced Genetics 3 credits**. Detailed and critical consideration of selected genetic topics with emphasis on recent advances. PREREQ: Genetics AND PERMISSION OF INSTRUCTOR.

**BIOL 5562 Freshwater Ecology 3 credits**. Study of the interaction of physical and biotic factors in aquatic communities. Field trips. PREREQ: BIOL 2209. COREQ: BIOL 5562L.

**BIOL 5563 Human Pathophysiology 4 credits**. The study of basic processes underlying diseases with an emphasis on correlating anatomical, functional, and biochemical alterations with clinical manifestations. Laboratory required. PREREQ: BIOL 3301 AND BIOL 3302, OR PERMISSION OF INSTRUCTOR. COREQ: BIOL 5563L.

BIOL 5563L Human Pathophysiology 0 credits. Assignments to apply principles from BIOL 5563. COREQ: BIOL 5563.

BIOL 5564 Lectures in Human Physiology 4 credits. Physiology of the nervous, muscular, circulatory, respiratory, and excretory systems. PREREQ: BIOL 3301, BIOL 3302, AND ONE YEAR OF COLLEGE CHEMISTRY.

**BIOL 5569 Special Topics in Microbiology 1-4 credits.** Study of selected topics in microbiology. Course contents will vary with topics selected. May be repeated with departmental approval for non-repetitive course content. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5573 Applied and Environmental Microbiology 3 credits**. Concepts in applied microbiology and microbial ecology, including fermentation, biotechnology, and ecophysiology. COREQ: BIOL 5573L.

**BIOL 5575 General Virology 3 credits**. Introduction to the general principles of virology through consideration of structure, genetics, replication and biochemistry of animal and bacterial viruses. PREREQ: COMPLETION OF 90 CREDITS.

**BIOL 5576 Ecology of Water Pollution 3 credits**. Study of the causes of pollution and their effects on the aquatic environment and its inhabitants. Special consideration will be given to the biological and chemical assessment of pollution in streams and to its control. Field work. PREREQ: BIOL 5562 OR PERMISSION OF DEPARTMENT. COREQ: BIOL 5576L.

BIOL 5576L Ecology of Water Pollution Lab 0 credits. Assignments to apply principles from BIOL 5576. COREQ: BIOL 5576.

**BIOL 5581-5582 Independent Problems 1-4 credits**. Individual problems will be assigned to students on the basis of interest and previous preparation. May be repeated. PREREQ: A MINIMUM OF TWO COURSES IN BIOLOGICAL SCIENCES AND PERMISSION OF INSTRUCTOR.

**BIOL 5586 Human Systemic Physiology 5 credits**. One semester human physiology course emphasizing the function and regulation of the muscular, skeletal, circulatory, respiratory, urinary, reproductive, and immune systems. PREREQ: CHEM 1111, CHEM L1111, CHEM 1112, CHEM L1112; BIOL 3301 AND BIOL 3302 OR EQUIVALENT. COREQ: BIOL 5586L.

BIOL 5586L Human Systemic Physiology 0 credits. Assignments to apply principles from BIOL 5586. COREQ: BIOL 5586.

**BIOL 5588 Advanced Radiobiology 3 credits.** An advanced-level class covering aspects of molecular radiobiology, teratogenesis, - oncogenesis, and acute radiation illnesses. It also considers nonstochastic radiation effects and the epidemiology of radiation exposures. Cross-listed as PHYS 5588. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 5589 Field Ecology 3 credits.** An intensive field of study of at least one biogeographical region to increase students' knowledge of and skill with field sampling techniques, field-study design, data collection and analysis, and report preparation. PREREQ: BIOL 2209.

**BIOL 5595 Ethology 3 credits.** Behavior of animals and the evolutionary mechanisms that dictate behavioral patterns. PREREQ: UPPER DIVISION OR GRADUATE STATUS.

**BIOL 5521 Ecological Concepts 3 credits**. Major concepts in ecology in relation to environmental degradation, pollution, hazardous materials, and environmental management. Credit may not be used for a graduate degree in biology.

**BIOL 6601 Animal Behavior 3 credits.** Behavior and social organization of animals with particular attention to the vertebrates. Lecture, laboratory, and field work. PREREQ: GRADUATE STANDING AND PERMISSION OF DEPARTMENT.

**BIOL 6602 Advanced Plant Physiology 3 credits**. Study of interrelationships of soil, water, and minerals in the nutrition of plants. PREREQ: BIOL 5504.

**BIOL 6603 Comparative Physiology 3 credits**. Study of the ways in which organisms meet their functional requirements. Lecture and laboratory. PREREQ: GRADUATE STANDING AND PERMISSION OF DEPARTMENT.

**BIOL 6604 Advanced Limnology: Streams and Biotic Production 3 credits.** Study of the ecology of streams; chemical, physical, and geological aspects in relation to biota. The production of organic matter in flowing water is emphasized, including the tracing of food chains and food webs and the construction of energy budgets. Field trips. PREREQ: PERMISSION OF INSTRUCTOR.

**BIOL 6605 Biometry 4 credits**. Application of descriptive and analytical statistical methods to experimental design and biological research. PREREQ: MATH 1143 OR EQUIVALENT OR PERMISSION OF INSTRUCTOR.

**BIOL 6606 Scientific Writing 3 credits.** Review of basic principles of grammar, organization, style, and persuasive argument as applied to specific areas of scientific writing. Each student will write proposals, technical reports and review manuscripts, and reviews of proposals and manuscripts.

**BIOL 6607 Environmental Physiology 3 credits**. Study of the physiological mechanisms and interrelated behavioral patterns by which animals respond to environmental factors. PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR.

**BIOL 6610 Principles of Molecular Biology 3 credits**. Introduction to subcellular biology and molecular genetics. DNA replication, cell division, the genetic code, transcription, translation, enzyme function, and control mechanisms in procaryotic and eucaryotic cells. PREREQ OR COREQ: BIOL 5532.

**BIOL 6613 Biogeography 3 credits**. Discussion of patterns of distribution of species and their historical and ecological causes. Includes research project.

**BIOL 6614 Evolutionary Ecology 3 credits**. Evolutionary theory applied to ecological processes, including selection theory, ecological genetics, life-history evolution and coevolution. PREREQ: BIOL 2209, BIOL 3358, BIOL 5517.

**BIOL 6616 Advanced Community Ecology 4 credits.** Historical and contemporary concepts and methods in community ecology and its interface with other fields, including molecular biology, informatics, conservation, social sciences, and landscape and ecosystem ecology. Emphasizes quantitative models and data analysis.

**BIOL 6621 Advanced Methods in Microbiology 3 credits.** PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR.

BIOL 6623 Soil and Ground Water Bioremediation 3 credits. Theoretical and applied aspects of biological treatment for contaminated subsurface systems.

**BIOL 6624 Microbial Ecology 3 credits**. Ecological principles applied to microorganisms. PREREQ: GRADUATE STANDING AND A COURSE IN MICROBIOLOGY.

**BIOL 6628 Cytology and Cell Physiology 4 credits.** Advanced study of the functions and structural components of cells. Lecture and laboratory. PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR.

**BIOL 6629 Basic Concepts in Biology 3 credits.** Considerations of fundamental concepts of biology, their origin and development. PREREQ: PERMISSION OF INSTRUCTOR.

BIOL 6631-6632 Advanced Systematic Botany 3 credits. Classification of plants as it rests on morphological, chemical, ecological, and genetic bases. PREREQ: BIOL 5512.

**BIOL 6633 Advanced Microbial Physiology 3 credits**. Advanced topics in microbial physiology and biochemistry. PREREQ: BIOL 5532 AND PERMISSION OF INSTRUCTOR.

**BIOL 6648 Graduate Problems 1-9 credits per semester** (may be repeated). Thesis related research. PREREQ: GRADUATE STANDING AND PERMISSION OF INSTRUCTOR. Graded S/U.

**BIOL 6651 Advanced Studies in Ecology 2-6 credits**. Flexible use of seminars, lectures, and laboratory work dealing with ecological relationships. May be repeated.

**BIOL 6652 Advanced Studies in Physiology 2-6 credits**. Flexible use of seminars, lectures, and laboratory work dealing with problems in physiology. May be repeated.

**BIOL 6653 Advanced Studies in Vertebrate Zoology 2-6 credits.** Flexible use of seminars, lectures, and laboratory work dealing with problems in vertebrate zoology.

**BIOL 6654 Advanced Studies in Invertebrate Zoology 2-6 credits**. Flexible use of seminars, lectures, and laboratory work dealing with problems in invertebrate zoology. May be repeated.

**BIOL 6655 Advanced Studies in Vertebrate Paleontology 2-6 credits**. Flexible use of seminars, lectures, and laboratory work dealing with problems in vertebrate paleontology. May be repeated.

**BIOL 6656 Advanced Studies in Systematic Biology 2-6 credits.** Flexible use of seminars, lectures, and laboratory work dealing with problems in systematic biology. May be repeated.

**BIOL 6657 Advanced Studies in Plant Biology 2-6 credits**. Flexible use of seminars, lectures, and laboratory work dealing with - problems in plant biology. May be repeated.

BIOL 6658 Advanced Studies in Limnology 2-6 credits. Flexible use of seminars, lectures, and laboratory work dealing with problems in limnology. May be repeated.

**BIOL 6659 Advanced Studies in Genetics 2-6 credits.** Flexible use of seminars, lectures, and laboratory work dealing with problems in genetics. May be repeated.

BIOL 6660 Selected Topics in Biochemistry 3 credits. Detailed study of selected areas of biochemistry. Course content will vary with

current demand. PREREQ: BIOL 5532 OR PERMISSION OF INSTRUCTOR.

**BIOL 6661 Advanced Studies in Environmental Physiology 2-6 credits.** Flexible use of seminars, lectures, and laboratory work dealing with problems in environmental physiology. May be repeated.

**BIOL 6662 Advanced Studies in Developmental Biology 2-6 credits.** Flexible use of seminars, lectures, and laboratory work dealing with problems in developmental biology. May be repeated.

**BIOL 6679 Electron Microscopy 5 credits**. Introduction to uses of the electron microscope in biological research. Designed to develop proficiency in use and operation of the electron microscope, specimen preparation for electron microscopy, and photographic skills as applied to electron microscopy. In addition, students will develop a special project for individual study. Enrollment limited to students who have a demonstrated need to learn electron microscopy techniques. PREREQ: BIOL 5579, GRADUATE STANDING, AND PERMISSION OF INSTRUCTOR.

**BIOL 6687 Environmental Science and Pollutants 3 credits.** Structure and function of ecosystems, sources and characteristics of hazardous materials, mechanisms and pathways of pollutant transport and degradation, mechanisms of pollutant impact on ecosystems and human health. PREREQ: BIOL 5521, AN UNDERGRADUATE ECOLOGY COURSE, OR EQUIVALENT.

**BIOL 6691 Seminar 1 credit**. Review of current research and literature. May be repeated until a maximum of 4 credits is earned. Graded S/U.

**BIOL 6692 Seminar 1 credit**. Review of current research and literature. May be repeated until a maximum of 4 credits is earned. Graded S/U.

CHEM 5507 Inorganic Chemistry II 2 credits. Structure and reactivity of inorganic compounds including coordination compounds; acid-base chemistry and nonaqueous solvent systems; organometallic chemistry and other special topics of current interest. PREREQ: CHEM 2211, CHEM 3352, OR PERMISSION OF INSTRUCTOR.

CHEM 5533 Environmental Chemistry 2 credits. This course applies chemical principles and calculation to investigate environmental issues. Natural systems, environmental degradation and protection, and the methodology of chemical detection and monitoring, PREREQ: CHEM 2232 AND CHEM 2234, OR PERMISSION OF INSTRUCTOR.

CHEM 5537 Environmental Chemistry Laboratory 1 credit. This laboratory course utilizes both structured and self-designed field and classroom experiments to emphasize principles of environmental chemistry. COREQ: CHEM 5535, OR PERMISSION OF INSTRUCTOR.

**CHEM 5538 Experimental Biochemistry 1 credit**. Laboratory course including both qualitative and quantitative experiments. Cross-listed as BIOL 5538. PREREQ or COREQ: BIOL 5532 or BIOL/CHEM 5545

**CHEM 5545 Biochemistry I 3 credits**. Introduction to basic aspects of biochemical systems, including fundamental chemical and physical properties of biomolecules. Enzymology including allosterism, metabolic regulation, bioenergetics, and carbohydrate metabolism. Cross-listed as BIOL 5545. PREREQ: Introduction to Biology and Organic Chemistry OR PERMISSION OF - INSTRUCTOR.

**CHEM 5547 Biochemistry II 3 credits.** Functional continuation of 5545. Lipid, amino acid and nucleotide metabolism. Emphasis is on metabolic regulation, metabolic dysfunction, biochemical mechanism of hormone action, biochemical genetics, protein synthesis, and metabolic consequences of genetic defects. Cross-listed as BIOL 5547. PREREQ: BIOL/CHEM 5545

CHEM 5553 Modern Experimental Physical Chemistry 2 credits. Magnetic, optical, and electrical properties of materials, calorimetry, voltammetry, optical and laser spectroscopic techniques. PREREQ: CHEM 3334 AND CHEM 3352.

**CHEM 5581-5582 Independent Problems in Chemistry 1-4 credits each**. Directed library and laboratory research. Courses may be repeated to a maximum of 6 credits. PREREQ: CHEM 3352.

**CHEM 5591 Seminar 1 credit.** A formal introduction to the chemical literature including electronic methods of literature searching. A detailed treatment of methods for presenting scientific seminars including a full-length student presentation on selected library or laboratory research. COREQ: CHEM 5581, 5582, 4485, OR PERMISSION OF INSTRUCTOR.

**CHEM 6601 Seminar 1 credit.** Oral reports of current literature and research in chemistry. This course may be taken multiple times as determined by degree requirements. Graded S/U.

**CHEM 6609 Advanced Inorganic Chemistry 3 credits.** Synthesis, reactions, spectroscopic characterization methods, and application of transition metal complexes. Foci will vary and may include metal carbon bond transformations, bioinorganic chemistry, or materials chemistry. PREREQ: Chem 5507 OR PERMISSION OF INSTRUCTOR.

CHEM 6621 Organic Reactions 3 credits. Advanced study of organic chemical reactions with emphasis on synthetic applications. PREREQ: CHEM 3302.

CHEM 6630 Advanced Analytical Chemistry 3 credits. Advanced treatment of standards, sampling, special methods of analysis, and methods of separation. PREREQ: CHEM 3302, CHEM 3304, CHEM 3334 AND CHEM 3352, OR PERMISSION OF - INSTRUCTOR.

CHEM 6650 Thesis 1-10 credits. Graded S/U.

CHEM 6655 Advanced Physical Chemistry 3 credits. Introductory material from quantum chemistry and statistical mechanics with applications in chemical thermodynamics. PREREQ: CHEM 3352, OR PERMISSION OF INSTRUCTOR.

CHEM 6671 Advanced Organic Chemistry 3 credits. Kinetics and mechanisms in organic reactions. PREREQ: CHEM 3302 AND CHEM 3352, OR PERMISSION OF INSTRUCTOR.

**ECON 5504 Game Theory 3 credits**. A mathematical modeling technique used to describe the behavior of interdependent economic agents. We define Nash equilibria in games with varying information structures: normal and extensive form games of perfect, imperfect and incomplete information. PREREQ: ECON 2210 AND ECON 2202.

**ECON 5509 Industrial Organization 3 credits.** Industrial organization extends the theory of the firm to examine firms' strategic behavior, including methods to differentiate products and aggressive prizing schemes, and the government's response to these activities. PREREQ: ECON 2210 AND ECON 2202.

**ECON 5511 Political Economy 3 credits.** A critical introduction to the relationship between economic institutions and social analysis. The social implications of different views on economic concepts, such as the division of labor, capital, and value, are investigated from a classical, neoclassical and an institutional perspective.

ECON 5533 Economic Development 3 credits. Theories and principles of economic development, characteristics, and problems of

underdeveloped and developing countries, alternative techniques and policies for the promotion of growth and development.

**GEOL 5502 Geomorphology 4 credits**. Process-response approach to landforms and landscapes. Historical perspectives, endo- and exogenetic processes, equilibrium and relict landforms. Emphasis on interrelations among various geologic sub-disciplines. Field trips, some lab exercises. PREREQ: GEOL 3313 OR PERMISSION OF INSTRUCTOR.

GEOL 5502L Geomorphology Laboratory 0 credits.

GEOL 5503 Principles of Geographical Information System 3 credits. Study of GIS fundamentals, introduction to GPS, databases, and metadata. Practical application of ESRI ArcView<sup>®</sup>. Build, edit, and query a GIS; basic spatial analysis. Requires competence in computer operating systems. PREREQ: CIS 1101 OR INSTRUCTOR APPROVAL; COREQ: GEOL 5503L.

GEOL 5503L Principles of GIS Laboratory 0 credits. Computer lab assignments to apply principles from GEOL 5503.

GEOL 5504 Advanced Geographic Information Systems 3 credits. Study of relational databases, including spatial analysis, and remote sensing. Practical application of Arc/Info and Idrisi. Exercises include digitizing, querying, digital terrain modeling, and image processing. PREREQ: GEOL 5503, GEOL 5503L OR PERMISSION OF INSTRUCTOR.

GEOL 5506 Environmental Geology 3 credits. Humans and the environment. Topics include: industrial exploitation of fossil fuels, energy sources, soils, water and other materials, environmental health, pollution, waste disposal, hazards, disasters, and land use. PREREQ: GEOL 1100 OR GEOL 1101.

GEOL 5507 GPS Application in Research 3 credits. Overview of satellite positioning systems usage. Topics include GPS theory, basic mapping concepts, use of mapping grade receivers for GIS data collection, and processing of carrier phase data for high precision applications.

GEOL 5508 GeoTechnology Seminar 2 credits. GIS applications in natural and social sciences; ethical and legal issues, current status and recent advances in GeoTechnology. Lectures, discussion, readings. PREREQ: GEOL 5503, GEOL 5503L OR PERMISSION OF INSTRUCTOR.

**GEOL 5509 Remote Sensing 3 credits.** Fundamentals and applications of single frequency, multispectral, and hyperspectral remote sensing for physical, natural, engineering, and social sciences. Emphasis on acquiring, processing, integrating, and interpretation of imagery. Requires competence in computer operating systems.

GEOL 5510 Science in American Society 2 credits. Observational basis of science; technology's historical influences on scientific developments; perceptions of science in contemporary America; tools/strategies for teaching science. Cross-listed as PHYS 5510. PREREQ: JUNIOR STANDING AND PERMISSION OF INSTRUCTOR.

**GEOL 5515 Quaternary Global Change 3 credits.** Use and interpretation of landforms, sediments, and fossil life in the reconstruction of Quaternary events, environment, and climates. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL 5516 Global Environmental Change 3 credits. Analysis of the causes and effects of both natural and human-induced environmental change. Integrates knowledge from other Earth Systems Science Courses, and examines and analyzes relevant problems in global environmental change using scientific methods. PREREQ: GEOL 1115, GEOL 1115L, GEOL 2310, GEOL 5506, and BIOL 2209.

GEOL 5517 General Soils 3 credits. Formation, morphology, and distribution of soils, including developments in soil classification. PREREQ: GEOL 1100 OR GEOL 1101 OR GEOL 1115, OR PERMISSION OF INSTRUCTOR.

GEOL 5520 Principles of Geochemistry 3 credits. Chemistry of the earth; discussion of factors controlling abundance, distribution, and migration of chemical elements within the earth. PREREQ: GEOL 2211, AND CHEM 1111, CHEM L1111, CHEM 1112, CHEM L1112, OR PERMISSION OF INSTRUCTOR.

GEOL 5527 Information Technology for GIS 3 credits. Study of servers, networks, system administration, relational database design and management, spatial database engines, and serving maps on the internet. The course uses traditional lectures along with demonstrations, and hands-on exercises. PREREQ: GEOL 5503, GEOL 5503L OR PERMISSION OF INSTRUCTOR.

GEOL 5528 Programming for GIS 3 credits. Course introduces students to Visual Basic programming for GIS. Students will learn the fundamentals of object oriented programming, rapid application development, basic coding, help documentation, and compiling. Students will complete a project where they develop a GIS utility of their choice. PREREQ: MATH 1147 AND GEOL 1100 OR 1101, OR PERMISSION OF INSTRUCTOR.

GEOL 5530 Principles of Hydrogeology 3 credits. Surface and groundwater occurrence, movement and recovery, water quality and pollution, well construction principles, and computer modeling. PREREQ: GEOL 1100 OR GEOL 1101, OR PERMISSION OF INSTRUCTOR.

**GEOL 5551 Field Methods in Environmental Sciences 3 credits.** Practical application of field methods with an Earth systems focus. Analysis of topographic and vegetational data, hydrologic methods, riverine processes and habitat, and soil characteristics, emphasizing use of GIS, GPS, remote sensing and other geotechnologies. Two-week summer course at Lost River Field Station. PREREQ: GEOL 5503 and GEOL 5503L, and either GEOL 5515 or GEOL 5516, and BIOL 2209.

**GEOL 5571 Historical Geography of Idaho 3 credits**. Influences of geography and geology on Idaho's economic, political and cultural history. May be team taught and include field trips, discussion sections. Cross-listed as HIST 5571 and POLS 5571.

GEOL 5580 Special Topics in GIS 1-3 credits. Visual Basic programming for GIS. May be repeated. PREREQ: GEOL 5503 and GEOL 5503L OR PERMISSION OF INSTRUCTOR.

**GEOL 5581 GeoTechnology Internship 1-3 credits**. Choose a project with either natural resource or municipal GIS emphasis and work with real-world data at the internship's off-campus location. Projects focus on using/creating geotechnical data. PREREQ: GEOL 5503 and GEOL 5503L OR PERMISSION OF INSTRUCTOR.

**GEOL 5591 Seminar 1 credit**. Field trip or discussion of current geologic literature and geologic problems. May be repeated until 3 credits are earned. PREREQ: PERMISSION OF INSTRUCTOR. Graded S/U.

GEOL 6602 Advanced Geomorphology 3 credits. Seminar in the treatment of theoretical concepts in classical and modern geomorphology.

**GEOL 6603 Geologic Writing Seminar 1 credit**. Review of quality geologic writing practices; extended field trip and introduction to regional geology. Topics include databases, abstracts, stratigraphic terminology, grant proposals, thesis prospecti, and use of reference library. Required for all Geosciences graduate students.

**GEOL 6604 Watershed Modeling 3 credits**. Use of geographic information systems and integrated simulation models to study the hydrologic cycle, water quality, agricultural and industrial impacts, environmental and related issues at the watershed scale. PREREQ: GEOL 5404.

**GEOL 6606 Geostatistical Spatial Data Analysis and Modeling 4 credits**. Description, analysis and modeling of spatial data in the geosciences, emphasizing hands-on application of geostatistical software tools for spatial analysis and probabilistic modeling in petroleum and groundwater reservoirs, environmental remediation, and mining or any application involving spatially-varying data. PREREQ: PERMISSION OF INSTRUCTOR.

GEOL 6607 Spatial Analysis 3 credits. This course focuses on advanced techniques for spatial data analysis covering issues in sampling, characterizing, visualizing, exploring and modeling spatial data. Techniques for point patterns, continuous data, area data, and spatial interaction data will be emphasized. PREREQ: GEOL 5503, MATH 1170/1175, AND A BASIC STATISTICS CLASS (e.g., MATH 2253) OR PERMISSION OF INSTRUCTOR.

**GEOL 6609 Advanced Image Processing 1 credit**. An advanced-level course in image processing techniques, such as using transforms, filters, and classifiers for data derived in the visible, infrared, and microwave. Specific topics include preprocessing, endmember analysis, classification (including spectral unmixing), and accuracy assessment. Practical application of theory for graduate student these and dissertations. PREREQ: GEOL 5509.

GEOL 6617 Environmental Geochemistry 3 credits. Geochemistry of environmental systems. Emphasis given to low-temperature water-rock interactions, including sorption processes, retardation, reaction kinetics and reaction-mass transport modeling. Cross-listed as CHEM 6617. PREREQ: CHEM 1112 AND GEOL 5520 OR CHEM 3351.

**GEOL 6628** Advanced GIS Programming 3 credits. Course focuses on Visual Basic for Applications (VBA) programming for ArcGIS. Students will learn to navigate, interact, and utilize ArcObjects to customize ArcGIS and to create and distribute their own customizations (i.e., dll). PREREQ: GEOL 5503, GEOL 5528, AND PERMISSION OF INSTRUCTOR.

GEOL 6630 Advanced Hydrogeology 3 credits. Advanced topics in hydrogeology, including precipitation and stream flow, soil moisture, principles and modeling of groundwater flow, migration of wastes in both saturated and unsaturated zones, design and impact of production wells, water chemistry. PREREQ: GEOL 5530 OR EQUIVALENT.

GEOL 6648 Research Problems 1-6 credits. Independent research on non-thesis subject matter, subject to approval of the staff before results receive credit. Course may be repeated until 10 credits are earned.

**GEOL 6650** Thesis 1-9 credits. Ordinarily a fieldproblem with supporting laboratory work undertaken by the student with approval of the geology graduate faculty, and after a thesis prospectus has been accepted. May be repeated. Graded S/U.

GEOL 8850 Doctoral Dissertation (Ph.D. in Engineering and Applied Science) variable credits. Research toward and completion of the dissertation. May be repeated Graded S/U.

**HIST 5505 Problems in History 3 credits**. A thorough consideration of historical problems, particularly from a comparative perspective. Designed to give deeper insight into problems, issues, and topics which are treated more generally in other courses. May be repeated with different content.

**HIST 5521 Federal Indian Relations 3 credits**. This course provides a legal-historical examination of the relationship between North American tribal peoples and the U.S. federal government between 1750 and the present. Special emphasis will be placed on Indian removal, assimilation policy, treaty negotiation, the Dawes Severalty Act, education policy, Indian reorganization policy, and termination.

**HIST 5523 Idaho History 3 credits**. A survey of the social, cultural, environmental, and political history of Idaho from pre-contact indigenous cultures to the present, emphasizing Idaho's relation to other states and regions in the West.

**HIST 5525 Women in the North American West 3 credits**. Comparative examination of the varied experiences of women in the North American West. Analyzes perceptions of women and women's views of themselves, women's activism, and women's cultural activities. Places special emphasis on the use of non-textual historical sources in uncovering the past lives of North American western women.

**HIST 5527 North American West 3 credits.** History of the North American West from pre-contact indigenous cultures to the present, with an emphasis on exploration, settlement, ethnic groups, borderlands, environment, federal policy, and cultural depictions.

HIST 5530 Global Environmental History 3 credits. Comparative examinations of historical interactions between humans and environmental factors in various time periods and regions throughout the world, and an assessment of their impacts on historical change.

**HIST 5535 Colonial Frontiers in America and Africa 3 credits**. A comparative examination of exploration, conquest, and resistance, and the interaction of cultures in frontier settings. Examines both the realities of the frontier and their impact on Western thought and imagination.

**HIST 5544 Victorian England and After 3 credits**. England, 1837 to the present. An examination of the cultural, social, political, and economic history of the most prosperous and productive period of English history including British national and imperial decline in the twentieth century.

HIST 5548 Medieval Social and Economic History 3 credits. Analyzes the impact of political instability, migration and environment upon Europeans (AD 200 - 1400).

HIST 5561 Independent Study: U.S. 1-3 credits. Selected readings in areas and periods not covered by the regular curriculum offerings. May be repeated. PREREQ: PREVIOUS UPPER-DIVISION COURSE WORK IN THE SUBJECT AREA, WITH A MINIMUM GRADE OF A-; GPA OF 3.5 IN ALL HISTORY COURSES; PERMISSION OF INSTRUCTOR; AND APPROVAL BY THE DEPARTMENT CHAIR.

HIST 5562 Independent Study: Europe 1-3 credits. Selected readings in areas and periods not covered by the regular curriculum offerings. May be repeated. PREREQ: PREVIOUS UPPER-DIVISION COURSE WORK IN THE SUBJECT AREA, WITH A MINIMUM GRADE OF A-; GPA OF 3.5 IN ALL HISTORY COURSES; PERMISSION OF INSTRUCTOR; AND APPROVAL BY THE DEPARTMENT CHAIR.

HIST 5563 Independent Study: World Regions 1-3 credits. Selected readings in areas and periods not covered by the regular curriculum offerings. May be repeated. PREREQ: PREVIOUS UPPER-DIVISION COURSE WORK IN THE SUBJECT AREA, WITH A MINIMUM GRADE OF A-; GPA OF 3.5 IN ALL HISTORY COURSES; PERMISSION OF INSTRUCTOR; AND APPROVAL BY THE DEPARTMENT CHAIR.

**HIST 5571 Historical Geography of Idaho 3 credits**. Influences of geography and geology on Idaho's economic, political and cultural history. May be team taught, and includes field trips, discussion sections. Cross-listed as GEOL 5571 and POLS 5571.

**HIST 5578 Imperialism and Progressivism 3 credits**. A study of the world 1880-1920. Movements of change within the West, Third World responses to the Western challenge, and global crisis.

**HIST 5579 Disease and U.S. Public Health 3 credits**. A survey of health, disease, and public health developments in American history. The course takes a broad approach to health, but includes the development of public health offices, the role of disease in society, specific diseases and related eradication programs, and questions related to health, equity, and civil liberties.

**HIST 5589 GIS for Social Sciences 3 credits.** An introduction to geographic information systems theory and applications focusing on subjects related to human systems in historical context (census, health, urban communities, etc.). Students will work directly with GIS software and learn foundational data management and processing skills along with introductory spatial analysis. Requires competence in computer operating systems.

HIST 5590 Cartography: History and Design 3 credits. History of how map-makers represent geographic, spatial data. Special attention to the elements of successful cartographic design.

**HIST 5590L Cartography Lab 1 credit**. Focuses on the application of Cartographic design concepts and techniques discussed in lecture. Provides students with hands-on practice designing map products of publication quality.

**HIST 6600 Graduate Proseminar 3 credits.** Introduction to graduate studies. Focus on contemporary historiographical debates, with emphasis on understanding significant developments in the profession. May be repeated with different topics.

HIST 6610 Geographic Information Systems in Historical Studies 3 credits. Introduction to the use of GIS in historical studies. Detailed examination of major projects around the world, of handling uncertainty and fragmentary data, and of problems of interoperability in integrating data about a place and sharing data from different studies. Practice in using primary sources in conjunction with GIS and related Information Technologies and in creating and using geographically integrated history databases. PREREQ: TRAINING IN GEOGRAPHICAL INFORMATION SYSTEMS.

**HIST 6621 Seminar: Interdisciplinary Topics in Social Sciences 3 credits.** Examination of selected topics in the social sciences from the analytic orientations and perspectives common and peculiar to the disciplines of political science, economics, sociology, and history.

**HIST 6642 Conferences and Grants 3 credits**. Emphasizes visual and oral skills for disseminating research to professional audiences. Students will develop and organize a campus-wide colloquium highlighting graduate research. Provides an introduction to grant writing with a focus upon funding sources for the social sciences and humanities.

HIST 6645 Independent Research Project 1-6 credits. Individual research project employing Geographic Information Systems. Topic selected by the student. May be repeated up to six credits. PREREQ: PERMISSION OF INSTRUCTOR WHO WILL DIRECT THE PROJECT AND OF THE STUDENT'S HISTORICAL RESOURCES MANAGEMENT GRADUATE COMMITTEE.

HIST 6650 Thesis 1-9 credits. Open to students seeking the M.A. in Historical Resources Management with the thesis option. May be repeated. Graded S/U.

HIST 6664 Graduate Internship 3-12 credits. Supervised experience in the application of Geographic Information Systems (GIS) and other relevant Information Technologies to a historical project in a collaborative work environment. May be repeated. PREREQ: PERMISSION OF INSTRUCTOR WHO WILL DIRECT THE INTERNSHIP AND OF THE STUDENT'S HISTORICAL RESOURCES MANAGEMENT GRADUATE COMMITTEE.

**PHYS 5505 Advanced Laboratory 2 credits**. Experiments in radiation detection and measurement, nuclear spectroscopy including x-ray and gamma spectroscopies, neutron activation and ion beam methods. Available to Geology, Engineering, Health Physics, and Physics majors. PREREQ: PERMISSION OF INSTRUCTOR.

**PHYS 5509 Introductory Nuclear Physics 3 credits.** A course in Nuclear Physics with emphasis upon structural models, radioactivity, nuclear reactions, fission and fusion. PREREQ: KNOWLEDGE OF ELEMENTARY QUANTUM MECHANICS AND DIFFERENTIAL EQUATIONS OR PERMISSION OF INSTRUCTOR.

PHYS 6615 Neutron Activation Analysis 4 credits. Theory and use of neutron activation methods for quantitative chemical analysis of natural and synthetic materials. Applications in geologic systems with be emphasized. Cross-listed as CHEM 6615, GEOL 6615. PREREQ: PERMISSION OF INSTRUCTOR.

**POLS 5501 Political Parties and Interest Groups 3 credits.** The nature and development of political parties and pressure groups as exemplified in the United States.

**POLS 5504 The Legislative Process 3 credits.** Nature and functions of the U.S. Congress. Topics covered: Legislative campaigns, the politics of law-making, congressional investigations, and major problems facing the Congress.

**POLS 5527 Voting and Public Opinion 3 credits**. Analysis of the way citizens and government communicate with each other. Elections, public opinion, and media influence are studied.

**POLS 5506 Intergovernmental Relations 3 credits.** Analysis of patterns of intergovernmental relations including changing patterns of program and fiscal responsibility in the federal system. The emerging role of new federal structures, state and substate regional organizations will be reviewed in the context of "new" federalism and its implications for intergovernmental relationships.

**POLS 5508 Metropolitan and Urban Studies 3 credits.** Analysis of metropolitan and smaller urban systems with emphasis on relationships among general groups, political organizations and institutions. Federal, state and interlocal programs will serve as a focus for analyzing particular problems of metropolitan and urban systems in the 20th century.

**POLS 5509 Community and Regional Planning 3 credits.** Steps involved in planning will be analyzed in the context of community and regional decision-making processes. Two perspectives will be stressed—that of the decision-maker, the social structure within which the decision-maker operates and strategies for implementing decision; and that of the citizen or group interest which lies outside the power structure of the community. Each perspective will be used as a framework for analyzing power configurations, techniques of identifying patterns of decision making, and various forms of citizen participation.

**POLS 5553 Public Policy Analysis 3 credits**. Theoretical and practical analyses of public policies, including theories of policy formation and their political implementation through governmental institutions. Case studies will provide the means of analyzing specific policy problems.

**POLS 5555 Environmental Politics and Policy 3 credits.** Study of the political forces affecting environmental policy and investigation of several specific policies affecting the environment, such as pollution control, energy production, hazardous chemicals, and the public lands.

**POLS 5566 Public Lands Policy 3 credits.** Analysis of the historical and contemporary use and disposition of the federal public lands. The agencies that manage the public lands, major laws, and regulations and the political conflict that surrounds their use and conservation.

**POLS 5578 Federal Indian Law 3 credits.** Examination of tribal governments; their relationship with the federal government; sovereignty, jurisdictional conflicts over land and resources; and economic development. Cross-listed as ANTH 5578.

**POLS 5579 Tribal Government 3 credits**. Complex legal position of Indian tribes as self-governing entities; principles of inherent powers; governmental organization, lawmaking, justice, relation to state and federal government. Cross-listed as ANTH 5579.

POLS 5512 Modern Political Analysis 3 credits. Methods of political inquiry and theories and doctrines of politics, with emphasis on modern developments.

**POLS 5519 Political Research Methods 3 credits**. This class investigates the theory and application of various research methods and statistical techniques common to the social sciences, with particular reference to their use in political inquiry.

POLS 5519L Political Research Methods Lab 1 credit. Application of, and practice in research methods.

POLS 5505 Administrative Process 3 credits. Analysis of the principles of public administration with an introduction to theories of - organization and administration.

**POLS 5541 Administrative Law 3 credits**. Introductory survey of the legal principals defining governmental administrative processes. Topics include judicial review, tort liability of governments and offices, rules and rule-making, due process, and the limits of administrative discretion.

**POLS 5567 State and Local Administration 3 credits.** Seminar in the practice and principles of state, municipal, and sub-state management. Emphasis is given to the evolution of interaction between different branches of sub-national government.

**POLS 5542 Constitutional Law 3 credits.** Analysis of opinions of the United States Supreme Court concerning the distribution of authority between the national government and the states and the relationship among the branches of the national government.

**POLS 6606 Environmental Law and Regulation 3 credits.** Federal, state, and local environmental regulations addressing environmental impact assessment; water and air pollution control, hazardous waste, resource recovery, reuses, toxic substances, occupational safety and health radiation, siting, auditing, liability. Cross-listed as ENGR 6606. PREREQ: PERMISSION OF INSTRUCTOR.

POLS 6616 Seminar: Public Administration and Public Policy 3 credits. Analysis of selected topics and academic literature in public administration and public policy.

**POLS 6620 Seminar: Philosophy of Social Science 3 credits**. The application of mathematical and scientific methods to the study of social, economic, and political life will be considered through the reading of certain seminal writings. Attention will be given to the fundamental assumptions about the nature of scientific rationality. Required of all D.A. students.

**POLS 6621 Seminar: Interdisciplinary Topics in Social Science 3 credits.** Examination of selected topics in the social sciences from the analytic orientations and perspectives common and peculiar to the disciplines of political science economics and sociology. Required of all D.A. students.

**POLS 6622 Public Administration Research Methods 3 credits.** Emphasis on the role of research methodology in administrative decision-making. Topics to be covered include modeling, evaluation design, ethics, sampling, data collection, data processing, data analysis, and report writing.

**POLS 5501 Political Parties and Interest Groups 3 credits.** The nature and development of political parties and pressure groups as exemplified in the United States.

**POLS 5504 The Legislative Process 3 credits**. Nature and functions of the U.S. Congress. Topics covered: Legislative campaigns, the politics of law-making, congressional investigations, and major problems facing the Congress.

**POLS 5527 Voting and Public Opinion 3 credits**. Analysis of the way citizens and government communicate with each other. Elections, public opinion, and media influence are studied.

**SOC 5503 Contemporary Sociological Theory 3 credits.** Survey and appraisal of sociological theories since 1945: structural functionalism, rational choice, conflict, symbolic interactionism, and phenomenology.

**SOC 5508 Statistical Analysis 3 credits.** Emphasizes advanced techniques in research design, data measurement, and multivariate analysis utilizing computer application.

**SOC 6601 Sociological Theories 3 credits.** A seminar in selected topics in theory which will focus on either historical, comparative or contemporary theories. May be repeated for up to 9 credits.

**SOC 6603 Topics in Methods 3 credits.** In depth focus on methodological topics relevant and timely to students' needs and interests. May be repeated up to 6 credits.

**SOC 6605 Social Organization 3 credits**. A seminar in selected topics of social organization and disorganization which will include such themes as complex organization, industrial sociology, community, and urban studies. May be repeated for up to 6 credits.

SOC 6607 Topics in Diversity 3 credits. A seminar in selected topics of social differentiation such as stratification, minorities, etc.

May be repeated for up to 6 credits.

**SOC 6613 Social Behavior 3 credits**. A seminar in social interaction which will consider such themes as collective behavior, social psychology, deviance, ethnography, and neo-positive approaches to behavioral analysis. May be repeated up to 6 credits.

**SOC 6615 Social Institutions 3 credits**. A seminar in selected aspects of medicine, law and crime, media, corporations, sports, religion, family, education, and political sociology. May be repeated up to 9 credits.

**SOC 6621 Seminar: Interdisciplinary Topics in Social Science 3 credits.** Examination of selected topics in the social sciences from the analytic orientations and perspectives common and peculiar to the disciplines of political science, economics and sociology. Required of all D.A. students.

# IDAHO STATE UNIVERSITY

# **External Reviewers for Notice of Intent**

Program: \_SED\_\_\_\_\_

Engineering

College: \_\_Arts and letters/Science and

Reviewed by: John C. Dixon; Stephen S. Mulkey

# Please provide comments regarding the following:

### National/Regional need for this proposed program:

Interdisciplinary programming in the environmental and natural resource sciences is a major emphasis at NSF and other Federal agencies. The specific emphasis of this program

is especially germane because virtually all environmental issues have myriad connections to human dynamics. NSF is especially interested in funding research on coupled human and natural systems. Nationwide, such programs continue to be rare owing in part to rigidity within traditional academic programs, which limits such interdisciplinary

connections.

Regionally, Idaho and the states of the Intermountain West are confronted with significant energy and water resource development issues that require not only scientific understanding of the resources but especially the complex policy and human interaction associated with resource development and sustainability. This kind of systems understanding will be increasingly important as climate change unfolds over this century. The complex relationship between surface water and ground water is especially crucial to agriculture in southern Idaho. Understanding policy and social aspects of human uses of natural resources requires an integrative, synthetic, interdisciplinary approach that is more properly called transdisciplinary. NSF is especially interested in transdisciplinary research. The SED program has the elements necessary to achieve this kind of research programming.

Although similar programs exist at the University of Idaho and in nearby Utah, these institutions draw on largely separate clientele. Thus, we see little competitive overlap between the proposed program and existing programs.

#### Quality of the proposed curriculum:

The distinctive character of such interdisciplinary programs at institutions throughout the US rests on the ability to leverage synthetic programming from existing curricula. In short, the most effective programs are more than a collection of courses derived from different disciplines. As outlined, the current curriculum for the SED is weak. The proposed two-

semester required seminar is pedagogically acceptable but the content is poorly enunciated and does not clearly contain the desired synthesis across disciplines. We recommend that this course contain a strong integrative and synthetic component that ties natural and social sciences together. Secondly, the curriculum does not address the inherent contrast in the preparation of doctoral students from the social and natural sciences. One of the most daunting challenges in development of interdisciplinary programming is the difficulty in training students in fundamentally disparate scientific paradigms. This is especially true when attempting to link the social and natural sciences around a problem oriented research program. Many examples of successful programming now exist, and these usually consist of an introductory course or two in which students from different disciplines focus on a series of research questions. Moreover, there is an increasing scholarship around the pedagogy of interdisciplinary education.

We feel that the SED curriculum can overcome both of these deficits through a concerted effort at curriculum design that includes players from the social and natural sciences.

# Quality of the program faculty in relation to meeting the needs of the proposed program: The

faculty quality is outstanding overall with a predominance of young, interdisciplinary trained members of collaborating departments. Most members of the likely faculty cohort are currently engaged is some degree of interdisciplinary research. Moreover, a high proportion of the likely faculty currently cooperate in collaborative research across college boundaries. We were especially impressed with the active research programs in the social sciences and their apparent readiness to link to the natural sciences.

#### Quality of Graduate School support:

There appears to be strong philosophical support for the program on the part of the graduate school. Although important, such support in spirit is not sufficient for successful development of a new program. As presently described, financial and administrative support appear to be generally lacking.

We specifically recommend that there be competitive graduate student fellowships dedicated to this program. Although there appears to be a ready cohort of employer supported graduate students, sustaining this program beyond its first few years will require dedicated graduate student fellowship line. The SED will never be regionally or nationally competitive for good students without such support. We recommend a minimum of eight such lines to be progressively phased in over the first four years of the program. The graduate school should commit to this ultimate level of support at the outset of the program in order ensure sustained development.

#### Quality and evidence of support for Doctoral candidates:

Individual faculty member support from grants appears to be very strong. Given the nominal teaching load of these faculty, the apparent level of extramural funding is remarkable. Overall institutional support for doctoral candidates is lacking. We recommend:

**a. Program support in the form of staff and graduate student space.** The graduate students in this program should be able to report to a central authority (The Director of the SED doctoral program) for program information and management. We recommend that the students be centrally housed or at least have a central gathering place where the unique aspects of their training can be shared. There should be both space and some minimal access to staff. Administrative support staff might initially be shared with an existing program, while more support is phased in as the graduate student population grows. Administration should commit to an ultimate level of support at the outset of the program.

b. Development of a reporting structure above the level of the College deans. One of the central features of successful interdisciplinary academic programming is the ability of such programs to operate university wide. While it would seem that a given College could successfully sponsor such programs, experience nationwide shows this not to be the case. Resources within a College are ultimately tied to programming within the College, and when resources are tight, the linkage of the interdisciplinary program to other Colleges will be constrained or eliminated. Funding for students and research must flow freely across College boundaries. Moreover, creation of synthetic interdisciplinary curricula generally requires more than just the good will of the participating Colleges. University level leadership should provide incentives for the creation of these new courses. Some modest funding for their creation should be made available from the Graduate School or the Provost. Failure to provide for the intellectual and fiduciary mobility of a new interdisciplinary program can constrain its development and may even result in its failure, depending on the agendas of the participating Chairs and Deans. There are several examples of this at other US institutions. We recommend that the SED director report to the Vice President for Academic Affairs, the Dean of the Graduate School, or possibly directly to the Provost.

#### Level of Institutional support:

Institutional support is strong philosophically and organizationally, but lacking financially at this point in time as indicated above.

The current teaching loads of faculty involved in graduate education is excessive for any graduate program. These teaching loads are especially excessive for fostering doctoral level research. We recommend that faculty integral to the success of the program be given reduced teaching assignments. This is especially necessary during the early years of the program after an initial cohort of student has been recruited.



December 19, 2011

Dr. Herbert D. G. Maschner, Professor Department of Anthropology Idaho State University 921 S. 8<sup>th</sup> Avenue, Stop 8005 Pocatello, ID 83209-8005

#### SUBJECT: IDAHO NATIONAL LABORATORY AND CENTER FOR ADVANCED ENERGY STUDIES ENDORSEMENT FOR THE PROPOSED INTERDISCIPLINARY PH.D. PROGRAM AT IDAHO STATE UNIVERSITY

Dear Dr. Maschner:

The Idaho National Laboratory (INL) and the Center for Advanced Energy Studies (CAES) are pleased to offer their endorsement for the proposed interdisciplinary PhD. Program, *Social and Environmental Dynamics*, at Idaho State University (ISU).

This program will be a vital component to the efforts to develop the next generation scientists and engineers that will help to carry out the missions of the INL. Clean energy options for the nation depend on understanding not only the technologies but also the policy, environmental and socioeconomic implications. It will require an interdisciplinary approach such as will be offered in the Social and Environmental Dynamics program.

The INL and ISU will also realize more immediate benefits with the implementation of this program. We anticipate INL employee participation through the Employee Education program administered by INL. We also anticipate ISU students enrolled in the curriculum would participate in internships at the INL with mentors drawn from such diverse disciplines as archaeology, history, geosciences, ecology and others. Such examples of the exchanges will promote valuable training for the students and eventually lead to establishment of a 21<sup>st</sup> century workforce for the State of Idaho and INL.

Sincerely,

9. W. Rogen, Jr.

J. W. Rogers, Jr., Director Center for Advanced Energy Studies (CAES)

dcw

cc: R. T. Jacobsen, ISU L. S. McCoy, DOE-ID, MS 1235 A. Vailas, ISU J. W. Rogers, Jr. Letter Log (JWR-10-11)

> 995 University Boulevard • Idaho Falls, ID 83401 www.caesenergy.org

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Dr. Herbert Maschner Director, Idaho Museum of Natural History 921 S. 8th Avenue Stop 8096 Pocatello, Idaho 83209

#### Dr. Maschner,

This letter is in support of the proposed Social and Environmental Dynamics PhD program at Idaho State University. Idaho State University is located in a very unique and diverse area of our great State. Many residents of the various rural communities, along with the proximity to the Fort Hall Indian Reservation make Idaho State University not only a preferred option, but in many cases, the only option for many people to attain an advanced degree.

I will focus on the impact for the residents of the Fort Hall Indian Reservation. The severe social and economic conditions within Native American communities throughout the United States are very well documented. The Fort Hall Indian Reservation is not immune to these issues. For various cultural, social, and economic reasons, it is not possible for many Tribal members to leave the reservation for educational pursuits. The social and cultural cost to pursue an advanced degree far outweighs the economic benefit to many of the residents of the Reservation.

I can speak to these issues at a very personal level. I am a member of the Shoshone-Bannock Tribes and a life-long resident of the Fort Hall Indian Reservation. Due to cultural and economic reasons, I would not have been able to attend college if Idaho State University was not an option. I was able to complete a Bachelor of Arts and a Master of Science degree *only* because I was able to remain near the reservation.

Based on my ability to attain a quality education at Idaho State University I have been able to maintain and improve my career choices. Currently, I am the Natural Resources Officer for the Bureau of Indian Affairs Fort Hall Agency. In my current position I manage a Natural Resources staff, whose main responsibility is protecting and enhancing the Natural Resources on the Fort Hall Indian Reservation. I work very close with the Shoshone-Bannock Tribes Natural and Cultural Resources staff. The dedication and desire to learn are more than evident among the Tribal staff conducting this kind of work. Many of these wonderfully talented individuals would be wonderful candidates for PhD programs in any institution they would choose to attend, but, because of cultural and/or economic constraints are not able to pursue these opportunities.

I would encourage the State Department of Education to allow for the development of the Social and Environmental Dynamics PhD program at Idaho State University.

Thank you for your consideration.

and A. Shomp

Randy A. Thompson, M.S. Natural Resources Officer Bureau of Indian Affairs Fort Hall Agency P.O. Box 220 Fort Hall, Idaho 83203

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OFFICE OF THE MAYOR 911 North 7th Avenue P.O. Box 4169 Pocatello, Idaho 83205

(208) 234-6163 Fax: (208) 234-6297 www.pocatello.us

BRIAN C. BLAD Mayor

ATTACHMENT 2

Pocatello City Council:

ROGER BRAY STEVE BROWN CRAIG COOPER W. JAMES JOHNSTON GARY MOORE EVA JOHNSON NYE

January 17, 2012

Richard Westerberg, President Idaho State Board of Education P.O. Box 83720 Boise, Idaho 83720-0037

Dear Mr. Westerberg:

It is my pleasure to express the City of Pocatello's support for the creation of a virtual, interdisciplinary Ph.D. program titled Social and Environmental Dynamics (SED) at Idaho State University (ISU).

ISU has long been a leader in interdisciplinary research, and their programs attract MS students from all over the world. The SED program is long overdue not only to allow these students to remain at ISU for their education, but also to aid businesses, such as the Idaho National Laboratory, whose staff members need additional training. Another benefit to the program is that it would allow the productive collaboration between ISU, the INL and many other businesses and agencies to continue.

In addition, the SED program is necessary for future research at and the expansion of the Idaho Museum of Natural History. Dr. Herbert Maschner has done an incredible job of revitalizing the programs available through the museum and Center for Archaeology, Materials, and Applied Spectroscopy. Both the museum and center are gems for the university, and it's a pleasure for me to support the work being done by both facilities. The SED program will ensure their continued success.

Idaho State University plays an important role in making Pocatello, our state and our world successful. Allowing students to continue their education and research in social-physical science based programs through the proposed SED will only enhance the university's mission. I encourage the State Board of Education to approve ISU's proposed Ph.D. program.

Sincerely

Brian C. Blad Mayor

Dr. Herbert Maschner, Idaho Museum of Natural History cc: Dr. Arthur Vailas, Idaho State University

> AN EQUAL OPPORTUNITY EMPLOYER VETERAN'S PREFERENCE

IRSA

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# BOISE STATE UNIVERSITY

# SUBJECT

Approval of Proposal for a new Online, Self-support Master of Business Administration

# APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.G. 4 and 5

### BACKGROUND/DISCUSSION

Boise State University (BSU) proposes to create a self-support, online program that will lead to a Master of Business Administration (MBA) degree.

The proposed program will provide access to a substantial population of potential students not presently served by existing MBA programs offered by state institutions in Idaho. BSU's current MBA programs are all face-to-face, and consist of a full-time MBA program for individuals just starting a professional career; a part-time night MBA program for working professionals; and an Executive MBA program for those in middle to senior management positions.

BSU's existing programs do not serve working professionals and other potential students in southwestern Idaho who cannot easily attend courses on campus. The proposed online program will provide access to those potential students who are place-bound and/or time-bound. Students in the proposed program are likely to be working professionals and should have a similar demographic profile to those attending BSU's part-time program. Thus, the creation of the proposed program will substantially broaden access to BSU's MBA programs for that group. BSU estimates an annual potential market of more than 1,000 students in southwestern Idaho.

The primary objective of the proposed program is to develop the future business leaders of Idaho, who will graduate with an understanding of the functions of business, the ability to formulate competitive business strategies, leadership skills, and an understanding of how to generate and commercialize ideas.

BSU will partner with a private, for-profit organization, Academic Partnerships, LLC, to convert BSU's existing MBA into an online format and will be responsible for marketing the program to individuals and organizations that wish to sponsor employees. Academic Partnerships approached BSU because they were seeking a partner who will offer a high quality, AACSB-accredited MBA program in the northwestern United States.

Academic Partnerships will assist in course design and administration, although BSU will retain sole responsibility for the content of courses. The efforts of

Academic Partnerships will greatly increase the visibility of, and therefore access to, BSU's program and will increase their ability to recruit students. BSU will retain complete control of and responsibility for the curriculum of the program and any intellectual property that may be produced.

Academic Partnerships is privately held and specializes in working only with public institutions. Since its founding only five years ago, Academic Partnerships has rapidly grown to become a global company. In addition to a world headquarters in Dallas, Texas and regional offices in the United States, Academic Partnerships has recently added offices in South America, Asia, Africa, and Europe as they expand globally. To date, their course designers have assisted more than 600 faculty from public universities convert more than 1,000 courses to online delivery.

# IMPACT

The program will be self-supporting, and no state appropriated funds will be used. Program revenues will cover administrative, instructional, and operating costs. The budget represents the need for instructional support staff and some hourly student assistants at approximately 9 FTE and \$298,800 salary cost for the third year. Consistent with the contract agreement, Academic Partnerships will receive 45% of revenues.

The budget includes a University administrative fee calculated as 6% of revenue less revenue to Academic Partnerships. Students will be charged \$750 per credit for the 48 credit program for a total of \$36,000 for the entire program. For FY2016, the third year of the program, BSU estimates 72 courses will be taught to classes with sizes ranging from 17 to 20, for a total of 5204 credit hours produced. BSU will offer a corporate discount of 15% and estimates that 50% of their students will enroll with such a discount. Local funds totaling \$68,291 will fund the first year's planning and development. Those local funds will be repaid in the second year of the program consistent with Board Policy V.R.

# ATTACHMENTS

Attachment 1 – Proposal for Online MBA ProgramPage 5Attachment 2 – Contract Agreement with Academic Partnerships, LLCPage 23

# STAFF COMMENTS AND RECOMMENDATIONS

Boise State University (BSU) proposes to create a new self-support, online Master of Business Administration (MBA) that is intended to provide access to students who cannot attend courses on campus.

BSU's proposed online option will not replace existing MBA programs, which are currently taught face-to-face. The main distinction between this proposed MBA and BSU's other MBA programs is the target audience and delivery method. While BSU will be adding 12 new courses to the curriculum, those will be existing courses that are revamped for the structuring and delivery of material.

BSU indicates there are approximately 1,039 potential online MBA students in their service area who are currently matriculating at out-of-state universities. BSU projects that the program will accommodate 40 students to begin in each cohort. There will be 6 cohorts with projected enrollment at any one time eventually reaching 268.

The College of Business and Economics at BSU is accredited by the Association to Advance Collegiate Schools of Business (AACSB) and the proposed program is subject to that accreditation. BSU and ISU offer a few of their traditional MBA courses online or in a blended format. BSU and UI have an Executive MBA (EMBA) and offer those courses in a face-to-face format. Other institutions such as Northwest Nazarene University offers a non-AACSB accredited online MBA degree; Washington State University offers the only AACSB-accredited online MBA programs in Washington; Portland State offers the only AACSB-accredited online MBA program in Oregon; and the University of Wyoming and University of Nevada-Reno both offer an online EMBA but no traditional online MBA program. The following represents Business Administration programs currently offered:

Institution	Region	Branch Campus	Program Title	Degree Level/Certificate	Method of Delivery
UI	2	CDA	General Management (EMBA) Self-Support	EMBA	Face-to-Face
LCSC	2	LEW/CDA	Business Administration	AS	classroom/online
LCSC	2	LEW/CDA	Business Administration	BA, BS	classroom/online
NIC	2	Coeur d'Alene	Business Administration	A.A.	Traditional, Web Enhanced On-line, Hybrid
NIC	2	Coeur d'Alene	Business Administration	A.S.	Traditional, Web Enhanced On-line, Hybrid
BSU	3	Boise	Business Administration (Executive) <b>Self-</b> support	M.B.A.	Traditional
BSU	3	BSU Campus	Business Administration	M.B.A.	Traditional
ISU	5	ISU Campus	Business Admin. (Accounting Emph.)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Admin. (CIS Emph.)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Admin. (Finance Emph.)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Admin. (HCA Emphasis)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Admin. (Management Emph.)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Admin. (Marketing Emph.)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Admin. (Native American Bus. Emph.)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Admin. (Operation Mgmt Emph)	MBA Emph.	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Administration	PB Cert	Face-to- Face/Moodle/Asynchronous
ISU	5	ISU Campus	Business Administration	MBA	Face-to- Face/Moodle/Asynchronous
ISU	5	University Place	Business Administration	MBA	Face-to- Face/Moodle/Asynchronous

# INSTRUCTION, RESEARCH, AND STUDENT AFFAIRS DECEMBER 13, 2012

BSU will partner with a private, for-profit organization, Academic Partnerships, LLC that will assist in marketing the program, course design, and administration. While the contract indicates that additional programs could be added as part of the agreement, AP's services only extend to the proposed online MBA at this time. Per the terms of the contract, AP will receive 45% of the tuition for each MBA online credit. The contract is for five years and will automatically renew for three (3) year terms unless terminated for convenience by giving 270 days' notice. Additionally, it's important to note that even if the agreement is terminated or expires; BSU must continue to pay AP for students who enrolled during the term, but take online classes after the term has terminated or expired. Any additions will be discussed with AP prior to securing their services.

Board staff worked with BSU to address questions regarding need for proposed program, curriculum, and contract with Academic Partnerships. Many of the questions and recommendations made by staff have been addressed; however, additional changes are needed to the contract that would clearly define on-line educational courses and clarify who would develop those. BSU is working with Academic Partnerships to vet those additional changes.

BSU's request to create a new Online Self-Support Master of Business Administration program was not listed on their Five-year Plan for Delivery of Academic Programs in the Southwest Region. BSU was asked to provide justification for adding the program now and clearly demonstrate the immediate need for the program. BSU provides that they were contacted in Spring 2012 by Academic Partnerships about the potential partnership and specifies that it was well after the deadline for Five-Year Plan submissions when negotiations had progressed to a point where they could bring a proposal forward. Not being able to respond quickly to the opportunity by Academic Partnerships, will result in them partnering with another institution at another state and BSU will lose the opportunity to offer an online, AACSB-accredited MBA program in southwestern Idaho.

It is important to note that the University of Idaho has a Master's of Business Administration proposed on their 5-year plan for delivery in Moscow, Idaho with anticipated delivery date of summer 2014.

CAAP recommends approval as presented. Board staff recommends approval provided this recommendation and approval does not negatively impact the UI's ability to bring forward their MBA program as it was included in their 5-year plan.

### **BOARD ACTION**

I move to approve the request by Boise State University to create a new online, self-support Master of Business Administration program and to approve the contract for services with Academic Partnerships, LLC.

Moved by \_\_\_\_\_ Seconded by \_\_\_\_\_ Carried Yes \_\_\_\_\_ No \_\_\_\_

# Idaho State Board of Education

# Proposal for Graduate and Doctoral Degree Program

Date of Proposal Submission:	October 1, 2012
Institution Submitting Proposal:	Boise State University
Name of College, School, or Division:	College of Business and Economics
Name of Department(s) or Area(s):	College-wide

# Program Identification for Proposed New, Modified, or Discontinued Program:

Title:	Master of Business Administration - Online			
Degree:	Master or Business Administration			
Method of Delivery:	online			
CIP code (consult IR /Registrar)	52.0101			
Proposed Starting Date:	Fall 2013			
Indicate if the program is:	Regional Responsibility Statewide Responsibility			

# Indicate whether this request is either of the following:

x New Graduate Program		Contract Program/Collaborative			
New Doctoral Program		Expansion of an Existing Graduate/Doctoral	Program		
New Off-Campus Graduate Program		Consolidation of an Existing Graduate/Docto	ral Program		
New Off-Campus Doctoral Program		] Discontinuation of an existing Graduate/Doct	oral Program		
Jutinh Shum 9/	20/12				
College Dean (Institution)	Date	Vice President for Research (as	Date		
John R Pelton 9/2	7/12				
Graduate Dean (as applicable)		Academic Affairs Program Manager	Date		
the Penn	10/4/1	<b>D</b>	í.		
Chief Fiscal Officer (Institution)	Date	Chief Academic Officer, OSBE	Date		
mount 10/1	12				
Chief Academic Officer (Institution)	Date	SBOE/OSBE Approval	Date		
Laboration 10	18/12				
President	Date				
		Vic	e President		

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Before completing this form, refer to Board Policy Section III.G., Program Approval and Discontinuance. This proposal form must be completed for the creation of each new program and each program discontinuation. All questions must be answered.

1. Describe the nature of the request. Will this program be related or tied to other programs on campus? Please identify any existing program, option that this program will replace. If this is request to discontinue an existing graduate or doctorate program, provide the rationale for the discontinuance. Describe the teach-out plans for continuing students.

The College of Business and Economics at Boise State University proposes creation of a selfsupport, online program that will lead to a Master of Business Administration (MBA) degree.

The proposed program will provide access to a substantial population of potential students not presently served by our existing MBA programs or by those of our sister institutions. Our current MBA programs are all face-to-face, and consist of a full-time MBA program for individuals just starting a professional career; a part-time night MBA program for working professionals; and an Executive MBA program for those in middle to senior management positions.

Our existing programs do not serve working professionals and other potential students who cannot easily attend courses on campus. The proposed online program will provide access to those potential students who are place-bound and/or time-bound. Students in the proposed program are likely to be working professionals and should have a similar demographic profile to those attending our part-time program. Thus, the creation of the proposed program will substantially broaden access to our MBA programs for that group.

The program will be self-supporting, and no state appropriated funds will be used. Program revenues cover instructional, administrative, and operating costs.

We will partner with a private, for-profit organization, Academic Partnerships, LLC, which will be responsible for marketing the program and for assisting in course design and administration. Our contract with Academic Partnerships is included as Appendix B. The efforts of Academic Partnerships will greatly increase the visibility of, and therefore access to, our program and will increase our ability to recruit students.

Boise State University will retain complete control of and responsibility for the curriculum of the program and any intellectual property that may be produced. As stated in the attached contract, page 6, Section VI.B: "Ownership of University Materials. The University retains all ownership and Intellectual Property rights in the University Materials" and on page 2, Section I.L.: "University Material" means the (i) Curriculum Materials, (ii) lectures, documentation, and other materials created by the University including Developed Materials created by the University and (iii) Faculty."

2. List the objectives of the program. The objectives should address specific needs the program will meet and the expected student learning outcomes and achievements. This question is not applicable to requests for discontinuance.

The primary objective of the program is to broaden and deepen the expertise of the business leaders of Idaho. Expected learning outcomes include a broad understanding of the functions of business, the ability to formulate competitive business strategies, leadership skills, and an understanding of how to generate and commercialize ideas. At completion of the program, students should be able to enhance the competitiveness of their organizations.

**3.** Briefly describe how the institution will ensure the quality of the program (i.e., program review). Will the program require specialized accreditation? If so, please identify the agency and explain why you do or do not plan to seek accreditation. This question is not applicable to requests for discontinuance.

Draft 9/25/12 Page 2 TAB 3 Page6 The following measures will ensure the high quality of the proposed emphases:

<u>Regional Institutional Accreditation</u>: Boise State University is regionally accredited by the Northwest Commission on Colleges and Universities (NWCCU). Regional accreditation of the university has been continuous since initial accreditation was conferred in 1941. Boise State University is currently accredited at all degree levels (A, B, M, D).

<u>Program Review</u>: Internal program evaluations will take place every five years as part of the normal departmental review process conducted by the Office of the Provost. This process requires a detailed self study (including outcome assessments) and a comprehensive review and site visit by external evaluators.

<u>Specialized Accreditation</u>: Baccalaureate and graduate programs in our College of Business and Economics are accredited by the Association to Advance Collegiate Schools of Business (AACSB), signifying that our programs have passed rigorous standards for quality.

<u>Graduate College</u>: The program will adhere to all policies and procedures of the Graduate College, which is assigned broad institutional oversight of all graduate degree and certificate programs.

4. List new courses that will be added to your curriculum specific for this program. Indicate number, title, and credit hour value for each course. This question is not applicable to requests for discontinuance.

(Appendix A includes course descriptions of the following courses as well as a table that compares new courses with existing courses.)

- A. MBA-ON 501 DESIGN THINKING AND STRATEGIC MANAGEMENT (4 credits)
- B. MBA-ON 505 MARKETING STRATEGY (4 credits)
- C. MBA-ON 510 PEOPLE AND ORGANIZATIONS (4 credits)
- D. MBA-ON 515 CORPORATE FINANCE (4 credits)
- E. MBA-ON 520 GLOBAL ECONOMICS: POLICY AND TRADE (4 credits)
- F. MBA-ON 525 MANAGERIAL ACCOUNTING (4 credits)
- G. MBA-ON 530 MANAGERIAL COMMUNICATION (4 credits)
- H. MBA-ON 535 INFORMATION TECHNOLOGY & BUSINESS ALIGNMENT (4 credits)
- I. MBA-ON 540 PROJECT MANAGEMENT (4 credits)
- J. MBA-ON 545 THE LEGAL ENVIRONMENT OF BUSINESS (4 credits)
- K. MBA-ON 550 OPERATIONS AND SUPPLY CHAIN MANAGEMENT (4 credits)
- L. MBA-ON 555 BUSINESS PLAN DEVELOPMENT (4 credits)
- 5. Please provide the program completion requirements to include the following and attach a typical curriculum to this proposal as Appendix A. For discontinuation requests, will courses continue to be taught?

All students take all twelve courses identified in item #4 above (this is the typical curriculum).

Credit hours required in major:	48
Credit hours required in support courses:	0
Credit hours in required or free electives:	0
Credit hours for thesis or dissertation:	0
Total credit hours required for completion:	48

6. Describe additional requirements such as preliminary qualifying examination, comprehensive examination, thesis, dissertation, practicum or internship, some of which may carry credit

### hours included in the list above.

Admission to the program is contingent on a satisfactory score on the GMAT examination, an applicant's undergraduate GPA, and letters of recommendation.

Admission to the program is also contingent on each student completing online competency examinations in business statistics, financial accounting, microeconomics, and spreadsheet-based analysis. These examinations include supporting study materials, but they are not for college credit.

The culminating experience of the program is contained within the capstone course listed above (MBA-ON 555). Students will develop a business plan for an opportunity they identify. Most students will be working professionals, so it is likely that these plans will be applicable to their organizations. This situation creates an instant return on investment for sponsoring organizations.

# 7. Identify similar programs offered within the state of Idaho or in the region by other colleges/universities. If the proposed request is similar to another program, provide a rationale for the duplication.

No fully-online MBA programs are offered by any of the state universities of Idaho. Therefore, the proposed program will provide access to MBA education to an as-yet underserved population.

Both Idaho State University and Boise State University offer several of their traditional MBA courses online or in a blended format. Boise State University and the University of Idaho offer Executive MBA courses in a face-to-face format only. Northwest Nazarene University offers a non-AACSB accredited online MBA degree.

Washington State University offers the only AACSB-accredited online MBA programs in the state of Washington. Portland State University offers the only AACSB-accredited online MBA program in the state of Oregon. The University of Wyoming and the University of Nevada-Reno both offer an online Executive MBA program but no traditional online MBA program.

Institution and Degree name	Level	Specializations within the discipline (to reflect a national perspective)	Specializations offered within the degree at the institution
BSU			
Master of Business Administration	Master's	Offered as a broad based degree covering all aspects of business	Offered as a broad based degree covering all aspects of business
Executive Master of Business Administration	Master's	Offered as a broad based degree covering all aspects of business	Offered as a broad based degree covering all aspects of business
Masters of Business Operational Excellence	Master's	Operational excellence	Operational excellence
CSI	N/A	N/A	N/A
CWI	N/A	N/A	N/A
EITC	N/A	N/A	N/A

# Degrees offered by school/college or program(s) within disciplinary area under review

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ISU			
Master of Business Administration	Master's	Offered as a broad based degree covering all aspects of business	Offered as a broad based degree covering all aspects of business
LCSC	N/A	N/A	N/A
NIC	N/A	N/A	N/A
UI			
Executive Master of Business Administration	Master's	Offered as a broad based degree covering all aspects of business	Offered as a broad based degree covering all aspects of business

8. Describe the methodology for determining enrollment projections. If a survey of student interest was conducted, attach a copy of the survey instrument with a summary of results as Appendix B. This question is not applicable to requests for discontinuance.

We project an annual potential market of 1039 online MBA students in our service area. We regard that estimate to be very conservative; the details of our estimate are as follows:

- 1. Recent studies suggest 80% of online students live within 100 miles of campus.<sup>1</sup> Boise State University's service area roughly approximates that distance, and therefore this analysis will focus on the market potential in our service area.
- 2. We use 2010 and 2011 statistics because they are readily available, but note that they add to the conservative nature of our estimate, given that current reports suggest substantial continuing growth rates in online education.<sup>2</sup>
- 3. Eduventures reports 591,000 graduate and 963,000 undergraduate students enrolled online nationwide during 2010.<sup>3</sup> Dividing those numbers yields a ratio of 0.61 online graduate students for each online undergraduate student. Multiplying that ratio by 5917, the number of Idaho residents enrolled in undergraduate online programs delivered by out of state providers<sup>4</sup>, gives an estimate of 3631 Idaho residents currently matriculating in non-Idaho based graduate programs. Of those 3631, we estimate 1167 to be business master's students, based on a ratio of 190,000 online business master's students divided by 591,000 total graduate students online.<sup>5</sup>
- 4. MBA students comprise the vast majority of business graduate students, and using our own internal ratio of 89% of our graduates earning an MBA degree, we reduce our estimate to 1039 potential online MBA students in our service area annually who are currently matriculating at out of state universities.

# References

Aslainian and Clinefelter (2012), "Online College Students 2012: Comprehensive Data on Demand and Preferences," Aslanian Market Research.

- <sup>2</sup> Eduventures (2011), "Online Higher Education Market Update 2011," page 2.
  <sup>3</sup> Eduventures (2011), "Online Higher Education Market Update 2011," page 31.
- <sup>4</sup> Eduventures (2011), "Online Higher Education Market Update 2011," page 22.
- <sup>5</sup> Eduventures (2011), "Online Higher Education Market Update 2011," page 34.

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**Enrollment and Graduates.** Using the chart below, provide a realistic estimate of enrollment at the time of program implementation and over three year period based on availability of students meeting the criteria referenced above. Include part-time and full-time (i.e., number of majors or other relevant data) by institution for the proposed program, last three years beginning with the current year and the previous two years. Also, indicate the projected number of graduates and graduation rates.

Institution	Relevant Enrollment Data		Number of Graduates			Graduate Rate	
	Previous Year	Previous Year	Current	Previous Year	Previous Year	Current	
BSU	(F 2010)	(F 2011)	(F 2012)	(2009-10)	(2010-11)	(2011-12)	
Master of Business Administration	116	125	149	36	47	39	~42 grads/yr
Executive Master of Business Administration	48	49	35	16	17	30	~30 grads/yr
Online Self-support Masters of Business Administration (to begin Fall 2013)			Projected enrollment at any one time will eventually reach: 40 begin in each cohort; 6 cohorts running; with attrition = 268 at any one time			Projected number of graduates per year: 90	Projected: ~90 grads/yr
CSI	N/A	N/A	N/A	N/A	N/A	N/A	N/A
CWI	N/A	N/A	N/A	N/A	N/A	N/A	N/A
EITC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ISU							
Master of Business Administration	123	130	123	47	31	68	~50 grads/yr
LCSC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NIC	N/A	N/A	N/A	N/A	N/A	N/A	N/A
UI Executive Master of Business Administration	21	16	25	9	9	10	~10 grads/yr
# 9. Will this program reduce enrollments in other programs at your institution? If so, please explain.

The proposed program targets the early-career professional, as does our existing face to face program. However, it provides access to education for those who cannot come to campus on a regular, weekly basis. Thus, although we may see some shift of enrollment from an existing program, we believe the vast majority of students will come from a currently un-served population.

**10.** Provide verification of state workforce needs such as job titles requiring this degree. Also include State and National Department of Labor research on employment potential. Please indicate the total projected job openings (including growth and replacement demands in your regional area, the state, and nation. Job openings should represent positions which require graduation from a program such as the one proposed. This question is not applicable to requests for discontinuance.

	2013	2014	2015
Local	213	213	213
State	426	426	426
Nation	61,624	61,624	61,624

a. Describe the methodology used to determine the projected job openings. If a survey of employment needs was used, please attach a copy of the survey instrument with a summary of results as **Appendix C.** 

This program provides the tools for managers in a very broad group of occupations. We have therefore used the entire SOC code of 11.xxxx for our estimates of workforce needs. According to national data, approximately 24% of workers in the 11.xxxx category have master's degrees. Therefore, to create the numbers in the table above, we have multiplied the numbers in the tables below by 24%. Note that because educational attainment is increasing among managers, the use of an existing percentage (24%) yields a conservative estimate.

	2008-2018 Projections for Idaho	2008	2018	Net	Annual
SOC Code	Occupation	Employment	Employment	Change	Openings**
11.xxxx	All Management Occupations	52,150	57,887	5,737	1,777

		Employ Number (	rment (1000's)	Change, 2010-20		10 year job openings due to growth	
2010 National Employment Matr code	ix title and	2010	2020	Number (1000's)	Percent	and replacements (1000's)	
Management Occupations	11-0000	8,776.1	9,391.9	615.8	7.0	2,567.7	

Section 8 above describes the method used to estimate the annual market potential of 1039 students.

b. Describe how the proposed change will act to stimulate the state economy by advancing the field, providing research results, etc.

As noted above, recent studies suggest 80% of online students live within 100 miles of campus. Therefore, although students from other states will have the opportunity to enroll, we expect the vast majority to be students from Idaho. Therefore, the impact of the program will be primarily on Idaho businesses.

This program will help individuals in Idaho become better managers of businesses. They will have a better understanding of current business practices and should be able to make better decisions for their Idaho employers. In turn, better decisions should help their companies become more competitive in all markets.

- c. Is the program primarily intended to meet needs other than employment needs, if so, please provide a brief rationale.
  N/A
- 11. Will any type of distance education technology be utilized in the delivery of the program on your main campus or to remote sites? Please describe. This question is not applicable to requests for discontinuance.

Yes. The program is fully online.

12. Describe how this request is consistent with the State Board of Education's strategic plan and institution's role and mission. This question is not applicable to requests for discontinuance.

The proposed program contributes to a number of aspects of the strategic plan of the Idaho State Board of Education.

GOAL 1: A Well educated citizenry

Objective A: Access : [Increases access of Idaho citizens to valuable training in business management.]

Objective B: Higher Level of Educational Attainment: [*Provides an additional avenue for advanced higher educational attainment.*]

GOAL 2: Critical Thinking and Innovation

Objective B: Innovation and Creativity: [*Provides graduates who will help to transform Idaho businesses and other organizations to be more efficient and effective.*]

The highlighted portions of Boise State University's mission statement are especially relevant to the proposed program:

Boise State University is a public, metropolitan research university offering an array of undergraduate and graduate degrees and experiences that foster student success, lifelong learning, community engagement, innovation and creativity. Research and creative activity advance new knowledge and benefit students, the community, the state and the nation. As an integral part of its metropolitan environment the university is engaged in professional and continuing education programming, policy issues, and promoting the region's economic vitality and cultural enrichment.

The highlighted portions of Boise State University's Core Theme Two are especially relevant to

Draft 9/25/12 Page 8 TAB 3 Page12 the proposed program:

### CORE THEME TWO: GRADUATE EDUCATION

Our university provides access to graduate education that is relevant to the educational and societal needs of the community and state, is meaningful within national and global contexts, is respected for its high quality, and is delivered within a supportive graduate culture.

Core Objective 2.1: Access. We provide students of all backgrounds with access to graduate educational opportunities in formats that are appropriate, flexible, accessible, and affordable.

Core Objective 2.2: Relevance. Our graduate students develop skills, knowledge, and experiences that are relevant and valuable locally, regionally, nationally, and globally.

Core Objective 2.3: Quality. Our graduate programs are composed of advanced and integrated learning experiences that provide disciplinary depth and interdisciplinary connections, and that reinforce the overall scholarly output of the university.

**13.** Describe how this request fits with the institution's vision and/or strategic plan. This question is not applicable to requests for discontinuance.

Please note that we are using Boise State's draft strategic plan 2012-17 in what follows.

Goals of Institution Strategic Plan	Proposed Program Plans to Achieve the Goal
Goal 1: Create a signature, high quality	Quality will be ensured by creating the
educational experience for all students.	program in partnership with an industry leader
	and by offering a program in an area we've
	had success in for over 30 years.
Goal 4: Align university programs and activities	Our program will serve Idaho businesses,
with community needs.	NGOs, governmental agencies, and
	educational institutions, and will help each of
	them become more effective, more efficient,
	and more competitive.

### 14. Is the proposed program in your institution's regional 5-year plan? Indicate below.

Yes <u>No X</u> If not on your institution's regional 5-year plan, provide a justification for adding the program.

In spring, 2012, we were contacted by Academic Partnerships, LLC, about the possibility of partnering with them. It was not until well after the deadline for 5-year plan submissions that negotiations had progressed to a point where we were in a position to bring forth the proposed program.

Academic Partnerships has already created similar partnerships with more than 20 public institutions. Academic Partnerships approached Boise State University because they are seeking a partner who will offer a high quality, AACSB-accredited MBA program in the northwestern United States. If we are not able to respond quickly to the opportunity presented by Academic Partnerships, they will seek a partnership with a university in a different state, and we will have lost the opportunity to offer an online, AACSB-accredited MBA program in southwestern Idaho in partnership with an organization that can provide a number of services that would help

Draft 9/25/12 Page 9 TAB 3 Page13 make our program successful.

The resulting loss to the region would be substantial. As noted above, recent studies suggest 80% of online students live within 100 miles of campus. The reason for this trend is twofold: First, students feel more comfortable participating in an online program offered by an institution with which they are familiar. Second and more importantly, although they may not *need* to travel to campus to attend class, online students in the vicinity of a campus have the *opportunity* to travel to campus for a wide variety of reasons: to seek help with coursework, to participate in extracurricular activities, etc. Therefore, without an online program at Boise State, students would need to take an online program from a university out of the local area, would not have the opportunity to take advantage of on-campus services, and would therefore be less likely to succeed.

**15.** Explain how students are going to learn about this program and where students are going to be recruited from (i.e., within institution, out-of-state, internationally).

Potential students will hear about the opportunity primarily through the promotional efforts of our partner, Academic Partnerships, LLC. Academic Partnerships will be responsible for promoting the program to both individuals and corporations who may wish to sponsor employees. Their personnel will assist candidates with the enrollment process and will monitor their progress while matriculating. Boise State University controls all aspects of the admission process and our policies regarding student eligibility for graduate programs all apply.

In addition to the marketing function, Academic Partnerships LLC provides course designers to help our faculty move their content to an online format. Academic Partnerships LLC does not provide any course content, however. Content is the sole responsibility of our faculty members. Finally, our partner assists in technology issues that arise from starting a fully online program.

Note that Boise State University will retain rights to all intellectual property associated with the program, as noted on page 6 of the contract between Boise State University and Academic Partnerships LLC. (Attachment B).

18. Program Resource Requirements. Indicate all resources needed to include the planned FTE enrollment, estimated expenditures, and projected revenues for the first three fiscal years of the program. Include both the reallocation of existing resources and anticipated or requested new resources. Second and third year estimates should be in constant dollars. Amounts should reflect explanations of subsequent pages. If the program is contract related, explain the fiscal sources and the year-to-year commitment from the contracting agency(ies) or party(ies). Provide an explanation of the fiscal impact of the proposed discontinuance to include impacts to faculty (i.e., salary savings, re-assignments).

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# **ATTACHMENT 1**

I. Planned Student Enrollm	ent									
(FTE calculated as 1 FTE =	= 12 credit	hours per s	emest	er for gradua	te pro	grams)				
	FY	13		FY 14		FY 15		FY 16	Cumul	ative Totals
	FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount	FTE	Headcount
A. New Enrollments (end										
of year headcount)	0	0	60	97	153	193	217	235	430	525
B. Shifting Enrollments	0	0	0	0	0	0	0	0	-	-
II. REVENUES	FY	13		FY 14		FY 15		FY 16	Cumula	tive Totals
			On-		On-		On-		On-	
	On-going	One-time	going	One-time	going	One-time	going	One-time	going	One-time
1. Appropriated-Reallocati	on								\$0	\$0
2. Appropriated new									\$0	\$0
3. Federal									\$0	\$0
4. Tuition									\$0	\$0
5. Student Fees		\$0		\$997,126		\$2,546,969		\$3,609,936	\$0	\$7,154,031
6. Other (Local Account)		\$68,291		-\$7,727		-\$60,564			\$0	\$0
TOTAL Revenue	\$0	\$68,291	\$0	\$989,399	\$0	\$2,486,405	\$0	\$3,609,936	\$0	\$7,154,031
Ongoing is defined as ong	oing opera	ating budg	et for ti	he program v	which w	vill become p	art of th	e base.		
One-time is defined as one	-time fund	ing in a fis	cal yea	r and not pa	rt of th	e base.				
						51/45				
	FY	13		FY 14		FY 15		FY 16	Cumul	ative lotals
III. Expenditures	FIE	Cost	FIF	Cost	FIF	Cost	FIE	Cost	FIE	Cost
A. Personnel Costs										
1. FTE										
	summer									
2. Faculty	stipend	\$ 36,000	3.5	\$ 256,500	9.5	\$ 640,500	12.0	\$ 882,000	25.0	\$1,815,000
3. Administrators	0.25	\$8,333	1.0	\$50,000	1.0	\$ 52,000	1.0	\$54,000	3.3	\$164,333
4. Adjunct Faculty	N/A	\$0	N/A	\$0	N/A	Ş -	N/A	\$0	N/A	\$0
5. Instructional Assistants	0	\$3,200	3.9	\$93,600	9.9	\$ 238,200	12.5	\$298,800	26.3	\$633,800
6. Research Personnel	0	\$0	0	\$0	0	\$0	0	\$0	0.00	\$0
7. Support Personnel	0	Ş0	0	\$0	0	Ş0	0	Ş0	0.00	\$0
8. Fringe Benefits		\$3,125		\$76,025		\$ 195,925		\$262,800		\$537,875
TOTAL Personnel Costs	0.25	\$ 54 <i>,</i> 825	8.4	Ş 476,125	20.4	\$1,126,625	25.5	\$1,497,600	54.5	\$3,155,175
B. Operating Expenses	FY	13		FY 14		FY 15		FY 16	Cumul	ative Totals
			On-		On-		On-		On-	
	On-going	One-time	going	One-time	going	One-time	going	One-time	going	One-time
1. Travel		\$3,000		\$3,000		\$3,000		\$3,000		\$12,000
2. Professional Services		\$0		\$448,707		\$1,146,136		\$1,624,471		\$3,219,314
4. Communications		\$0		\$6,600		\$6,600		\$6,600		\$19,800
6. Materials and Supplies		\$200		\$1,200		\$1,200		\$1,200		\$3,800
7. Rentals		\$200		\$4,200		\$10,800		\$12,000		\$27,200
8. Repairs and Maintenance	e	\$500		\$9,000		\$9,000		\$9,000		\$27,500
10. Miscellaneous		\$500		\$3,000		\$3,000		\$3,000		\$9,500
TOTAL OPERATING EXPENS	ES	\$4,400		\$475,707		\$1,179,736		\$1,659,271		\$3,319,114
C. Canital Outlay	EV	13		EV 1/1		EV 15		EV 16	Cumul	ative Totals
		15	On-	1114	On-	1115	On-		On-	
	On-going	One-time	going	One-time	going	One-time	going	One-time	going	One-time
1. Library resources		\$0		\$0		\$0		\$0		\$0
2. Equipment		\$0		\$9,000		\$9,000		\$9,000		\$27,000
TOTAL Capital Outlay		\$0		\$9,000		\$9,000		\$9,000		\$27,000
D. Physical Facilities Const	ruction	\$0		\$0		\$0		\$0		\$0
E. Indirect Costs		\$3,866		\$28,567		\$67,597		\$89,856		\$189,886
Total Expenditures		\$ 68.291		\$989.399		\$2,382.958		\$3,255.727		\$6,696.376
Not Income (Deficit)		ć1		ć0		¢102 446		¢2Ε4 200	D	u into ede o
iver income (Deficit)		γı		ŞU		Ş103,440		ŞSS4,209	Dra	1 9925792

# Because no funding of this program will be part of the base of any appropriated budget, all expenses and all revenues are denoted as "non-recurring".

Budget Notes:

I.A. FTE calculated as yearly student credit hours divided by 24.

II.B.2. As per contract, Academic Partnerships will receive 45% of revenues.

II.C.E. University administrative fee calculated as 6% of revenue less revenue to Academic Partnerships.

III.B.5. Students will be charged \$750 per credit for the 48-credit program for a total of \$36,000 for the entire program. For FY2016, the third year of the program, we estimate 72 courses will be taught to classes with sizes ranging from 17 to 20, for a total of 5204 credit hours produced. Note that we will offer a corporate discount of 15%; we estimate that 50% of our students will enroll with such a discount.

III.B.6. Local funds totaling \$68,291 will fund the first year's planning and development. Those local funds will be repaid in the second year of the program.

### a. Faculty and Staff Expenditures

Project for the first three years of the program the credit hours to be generated by each faculty member (fulltime and part-time), graduate assistant, and other instructional personnel. Also indicate salaries. After total student credit hours, convert to an FTE student basis. Please provide totals for each of the three years presented. Salaries and FTE students should reflect amounts shown on budget schedule.

FY 2014					
Name, Position & Rank	Annual Salary Rate	FTE Assignment to this Program	Program Salary Dollars	Projected Student Credit Hours	FTE Students
Nine current but TBD, COBE full time faculty members	\$105,000 (avg)	3.5	\$256,500	1437	60
Totals		3.5	\$256,500	1437	60
FY2015					
Name, Position & Rank	Annual Salary Rate	FTE Assignment to this Program	Program Salary Dollars	Projected Student Credit Hours	FTE Students
Nine current but TBD, COBE full time faculty members	\$105,000 (avg)	9	\$535,500/year	3304	138
One faculty member hired from program revenues	\$105,000 (avg)	1	\$105,000/year	367	15
Totals		10	\$640,500	3671	153
FY2016					
Name, Position & Rank	Annual Salary Rate	FTE Assignment to this Program	Program Salary Dollars	Projected Student Credit Hours	FTE Students
Nine current but TBD, COBE full time faculty members	\$105,000 (avg)	9	\$567,000	2896	163
Three faculty members hired from program revenues	\$105,000 (avg)	3	\$315,000	1300	54
Totals		12	\$982,000	5204	217

Project the need and cost for support personnel and any other personnel expenditures for the first three

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We estimate the need for instructional support staff and some hourly student assistants at approximately 9 FTE and \$298,800 salary cost for the third year.

#### b. Administrative Expenditures

Describe the proposed administrative structure necessary to ensure program success and the cost of that support. Include a statement concerning the involvement of other departments, colleges, or other institutions and the estimated cost of their involvement in the proposed program.

alary Percent of Salary Dollars to
Program
100%

The Director will be responsible for:

- 1. Interacting with our partner on student recruiting and admission processes
- 2. External relations with alumni and the business community
- 3. Strategic planning and execution including budget development and management
- 4. Program operations across all university functions
- 5. Insuring student success by tracking progress, providing advising, and assisting with financial aid
- c. Operating Expenditures (travel, professional services, etc.) Briefly explain the need and cost for operating expenditures.

This program is self-supporting. We do not provide books & materials but we do anticipate the occasional trip to visit our partner's corporate offices.

#### d. Capital Outlay

- (1) Library resources
  - (a) Evaluate library resources, including personnel and space. Are they adequate for the operation of the present program? If not, explain the action necessary to ensure program success.

Current library resources are sufficient for the existing MBA programs and should be sufficient for this one too.

(b) Indicate the costs for the proposed program including personnel, space, equipment, monographs, journals, and materials required for the program.

None.

(c) For off-campus programs, clearly indicate how the library resources are to be provided.

Students may access the online resources of our library.

(2) Equipment/Instruments

Describe the need for any laboratory instruments, computer(s), or other equipment. List equipment, which is presently available and any equipment (and cost) which must be obtained to support the proposed program.

Draft 9/25/12 Page 13 TAB 3 Page17 We may need to rent additional space on the cloud.

#### e. Revenue Sources

(1) If funding is to come from the reallocation of existing state appropriated funds, please indicate the sources of the reallocation. What impact will the reallocation of funds in support of the program have on other programs?

No state appropriated funds are reallocated to this program.

(2) If the funding is to come from other sources such as a donation, indicate the sources of other funding. What are the institution's plans for sustaining the program when funding ends?

N/A.

(3) If an above Maintenance of Current Operations (MCO) appropriation is required to fund the program, indicate when the institution plans to include the program in the legislative budget request.

N/A

(4) Describe the federal grant, other grant(s), special fee arrangements, or contract(s) to fund the program. What does the institution propose to do with the program upon termination of those funds?

N/A

(5) Provide estimated fees for any proposed professional or self-support program.

We propose a fee of \$36,000/student for the entire 48 credit program.

## Attachment A. Curriculum.

Master of Business Administration Online Program	
Course Number and Title	Credits
MBA-ON 501 Design Thinking & StrategicManagement4MBA-ON 505 Marketing Strategy4MBA-ON 510 People and Organizations4MBA-ON 515 Corporate Finance4MBA-ON 520 Global Economics: Policy and4Trade4MBA-ON 525 Managerial Accounting4MBA-ON 530 Managerial Communication4MBA-ON 535 Information Technology & Business4Alignment4MBA-ON 540 Managing Successful Projects4MBA-ON 550 Operations and Supply Chain4MBA-ON 555 Business Plan Development4	
Total	48

Comparison of Courses required by Proposed Program with Courses required by Existing MBA					
Program					
Proposed Online MBA	Existing Face to Face MBA				
MBA-ON 501 Design Thinking & Strategic	MBA 531 Strategic Perspectives & MBA 546				
Management	Strategic Management				
MBA-ON 505 Marketing Strategy	MBA 540 Marketing Strategy				
MBA-ON 510 People & Organizations	MBA 552 People and Organizations				
MBA-ON 515 Corporate Finance	MBA 543 Managing Corporate Finance				
MBA-ON 520 Global Economics: Policy & Trade	MBA 544 Global Economics: Policy and Trade				
MBA-ON 525 Managerial Accounting	MBA 504 Managerial Accounting for Planning and				
	Control				
MBA-ON 530 Managerial Communication	MBA 568 Managerial Communication				
MBA-ON 535 Info Tech & Business Alignment	MBA 569 Info Tech & Process Management				
MBA-ON 540 Project Management	MBA 549 Successful Project Management				
MBA-ON 545 Legal Enviro of Business	MBA 558 Managers and the Legal Environment of				
	Business				
MBA-ON 550 Operations & Supply Chain Mgmt	MBA 559 Issues in Supply Chain Management				
MBA-ON 555 Business Plan Development	MBA 567 Business Plan Development				

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### **Descriptions of Courses Required for Proposed Program:**

- A. MBA-ON 501 DESIGN THINKING AND STRATEGIC MANAGEMENT (0-0-4)(F/S/SU). Examines collaborative innovation processes that are transforming business and driving industry life cycles. Includes a first exposure to the creation of functional, business-level, and corporate-level strategies. Special consideration of organizational design, diversification, mergers and acquisitions, and measures of strategic performance including use of Balanced Scorecards. Interpersonal skills enhanced via online collaboration with classmates. PREREQ: ADM/PROG.
- B. **MBA-ON 505 MARKETING STRATEGY (0-0-4)(F/S/SU).** Focuses on revenue-generating opportunities with special emphasis on evaluating opportunities for new products or services. Includes segment analysis, customer choice behavior, branding, marketing tactics, personal selling, and the evaluation of market opportunities. Includes opportunity assessment project in industry sector of student's choosing. PREREQ: MBA-ON 501.
- C. **MBA-ON 510 PEOPLE AND ORGANIZATIONS (0-0-4)(F/S/SU).** Emphasizes integrated manageremployee relations in an organization. Includes HR planning, employee recruitment, selection, performance appraisal, discipline, coaching, compensation, and termination issues. Also focuses on collaboration, group dynamics, motivation, leadership, problem-solving, negotiation, and selfmanagement. Interpersonal skills enhanced via online collaboration with classmates. PREREQ: MBA-ON 505.
- D. MBA-ON 515 CORPORATE FINANCE (0-0-4)(F/S/SU). Examines the three major decisions in corporate finance affecting value of the firm: investment, financing and cash distribution. Includes the methods used to measure corporate value and evaluate financial performance. Issues in each of the three decision areas are examined within the context of their impact on the valuation model and financial performance metrics. Includes financial modeling project in industry sector of student's choosing. PREREQ: MBA-ON 510.
- E. MBA-ON 520 GLOBAL ECONOMICS: POLICY AND TRADE (0-0-4)(F/S/SU). Reviews how economies work, the differences between economic systems, factors that influence international trade, exchange rates, labor economics, and government polices related to trade. Includes a survey on the economies of the world, current topics in global economics, data sources for international economic trends, and an introduction to major international trade agencies/associations. Includes application project in industry sector of student's choosing. PREREQ: MBA-ON 515.
- F. MBA-ON 525 MANAGERIAL ACCOUNTING (0-0-4)(F/S/SU). Examines various cost-based accounting concepts and practices. Particular emphasis on the challenges involved in using them to evaluate past performance and plan future deployment of firm resources. Interpersonal skills enhanced via online collaboration with classmates to solve managerial accounting problems. PREREQ: MBA-ON 520.
- G. **MBA-ON 530 MANAGERIAL COMMUNICATION (0-0-4)(F/S/SU).** A hands-on introduction to written and oral managerial communication including informal exchanges, elevator pitches, meetings, and persuasive formal presentations. Emphasis placed on team-oriented and supervisory communication tactics. Interpersonal skills enhanced via online collaboration with classmates. PREREQ: MBA-ON 525.

 H. MBA-ON 535 INFORMATION TECHNOLOGY AND BUSINESS ALIGNMENT (0-0-4)(F/S/SU). Examines the role of information technology in business process integration, strategic alignment, and business analytics. Includes application project in industry sector of student's choosing. PREREQ: MBA-ON 530.

- MBA-ON 540 MANAGING SUCCESSFUL PROJECTS (0-0-4)(F/S/SU). Introduces and provides experience in the front-end issues of project management such as team formation, communication strategies, conflict management, project constraints, and risk analysis. Includes use of the project management tools: PERT/Critical Path, resource utilization, project monitoring and tracking, and critical chain analysis. Includes application project in industry sector of student's choosing. PREREQ: MBA-ON 535.
- J. MBA-ON 545 LEGAL ISSUES IN BUSINESS (0-0-4)(F/S/SU). Introduces future managers to the major legal issues involved in the business environment. Covers legal reasoning and the legal system,

*Draft 9/25/12 Page 16* TAB 3 Page20 agency and business associations, torts, contracts, intellectual property, employment law, sales, and product liability. Includes application project in industry sector of student's choosing. PREREQ: MBA-ON 540.

- K. MBA-ON 550 OPERATIONS AND SUPPLY CHAIN MANAGEMENT (0-0-4)(F/S/SU). Introduces product and service movement within the firm and between the firm and its partners up and down the supply chain. Focus on logistics management, supplier relationships, and creating operational excellence within the firm. Includes operations modeling project in industry sector of student's choosing. PREREQ: MBA-ON 545.
- L. **MBA-ON 555 BUSINESS PLAN DEVELOPMENT (0-0-4)(F/S/SU).** Integrates previous coursework via development of a business plan in industry sector of the student's choosing. PREREQ: MBA-ON 550.

Attachment B follows: Contract between Boise State University and Academic Partnerships LLC

Key aspects of agreement:

- All curriculum and course content is the responsibility of Boise State University faculty members.
- Boise State University retains rights to all intellectual property created by faculty members.
- The primary role of Academic Partnerships will be the marketing of the program and the recruitment of students.
- Academic Partnerships will receive 45% of revenues. In the future, should Boise State decide to offer two additional programs in partnership with Academic Partnerships, that percentage would

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## **ATTACHMENT 1**

drop to 40%.

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### SERVICE AGREEMENT

This Service Agreement ("Agreement") is entered into by and between Academic Partnerships, LLC, a Delaware limited liability company ("AP"), and Boise State University (the "University") as of October 15, 2012 (the "Effective Date). AP and the University are sometimes referred to in this Agreement each as a "Party", and collectively as the "Parties."

### Recitals

- A. The University offers undergraduate, graduate, and post-graduate courses both (i) in traditional classroom settings ("Offline Educational Courses") and (ii) online ("Online Educational Courses").
- B. AP provides services to universities who offer Online Educational Courses.
- C. Subject to the terms and conditions set forth herein, the University desires to engage AP to provide AP Resource Materials (defined herein) in connection with the University's (i) development, maintenance and marketing of the University's Online Educational Courses and (ii) the conversion of Offline Educational Classes to Online Educational Classes.
- D. The rights and obligations contemplated herein shall not inure to AP or the University unless and until approval of this Agreement is sought and received from the University's Office of the Vice President for Finance and Administration, the University's Office of the Provost and Vice President for Academic Affairs, and the Idaho State Board of Education.

### I. Definitions

Capitalized terms used in this Agreement shall have the meanings described below or elsewhere in the Agreement.

- A. "AP Materials" means (i) AP Resource Materials, (ii) Developed Materials created by AP, and (iii) any documentation or other materials associated with the foregoing.
- **B.** "AP Resource Materials" means the materials, resources and services of AP made available to the University when (i) developing Online Educational Courses, (ii) marketing such Online Educational Courses, (iii) converting the University's Offline Educational Courses to Online Educational Courses, (iv) providing student retention support and (v) developing the best practices for online curriculum, instruction and assessment.
- C. "AP Revenue" means the product of multiplying the AP Revenue Percentage times the Revenue.
- **D.** "AP Revenue Percentage" means a percentage of the tuition for each Online Educational Course in which a Student is enrolled. For the first Program, and to the extent one or more new Programs are added during the Term of this Agreement, the Parties will enter into an Addendum to this Agreement, the

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purpose of which will be to set forth the AP Revenue Percentage for such new Program. Any such Addendum shall be in the form of **Exhibit A** attached hereto.

- E. "Curriculum Materials" means a group of related Online Educational Courses (along with instructional and assessment materials), the successful completion of which results in a degree or other credentialing.
- F. "Developed Materials" means any ideas, designs, development tools, know-how, concepts or written materials developed by either Party.
- G. "Faculty" means persons appointed by the University to teach Online Educational Courses.
- H. "Intellectual Property" means any and all now known or hereafter existing rights associated with (i) works of authorship, including exclusive rights, copyrights, moral rights and mask works, (ii) trade secret rights, (iii) trademark and trade name rights; (iv) patents, designs and other industrial property rights, (v) other intellectual and proprietary rights of every kind and nature whether arising by operation of law, by contract or license or otherwise and (vi) all registrations, renewals, extensions, combinations, divisions, or reissues of any of the foregoing.
- I. "Program(s)" mean units of study offered through Online Educational Courses that lead to a degree or other certification.
- J. "Revenue" means all the tuition collected from Students for Online Educational Courses, irrespective of any marketing efforts by University, including Revenue from all general, prerequisite or co-requisite Online Educational Courses.
- K. "Student(s)" means an individual enrolled in one or more Online Educational Courses at the University.
- L. "University Material" means the (i) Curriculum Materials, (ii) lectures, documentation and other materials created by the University, including Developed Materials created by the University and (iii) Faculty.

### **II.** AP Obligations

During the Term (defined herein) of this Agreement, AP shall have the following obligations:

### A. Marketing. AP will:

(i) be the exclusive marketer, other than some traditional advertising by University such as brochures and a home web page, of the Online Programs listed in the Addendum and will market the University and its Programs using affiliate partnerships representatives and digital marketing; and

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- (ii) provide competitive research regarding other universities offering similar Programs.
- **B. Program Implementation.** AP's implementation team will work with the University to launch the University's Programs. AP's implementation support will include:
  - (i) an integration team that works with the University's personnel (specific to each degree/certificate);
  - (ii) facilitation of Program planning sessions (faculty meetings, admission policies, course sequence and calendar);
  - (iii) facilitation of operational planning sessions with key University departments to review existing processes and recommend efficiencies;
  - (iv) development of a "Program Guidelines" document;
  - (v) facilitation of cross-functional meetings to manage implementation processes; and
  - (vi) project management services, including development of a detailed project plan (the "Plan") to drive program implementation activities, and weekly reporting of project progress against the Plan.
- C. Assistance with Student Information System ("SIS") and Learning Management System ("LMS"). The University will provide to AP, read-only access to records within its SIS and LMS that contain information about students enrolled in AP Programs, including any pre-requisite General Education courses. AP relies primarily on daily extracts from university systems, but will utilize essential data from these systems to (i) create Program prototypes, (ii) assist faculty with curriculum development, (iii) facilitate student matriculation, (iv) assist in improving student retention, (v) monitor Program success and (vi) assist with and facilitate the growth of the University's Online Educational Courses. Essential SIS data includes, but is not limited to, applicant, student, section and enrollment data. Essential LMS data includes, but is not limited to, course, section, student, grade and time-and-activity data critical to providing student retention.
- **D. Curriculum Support Services.** AP will work with Faculty and the University with Program design, including but not limited to:
  - (i) assisting with Program / course blueprinting and course conversion;
  - (ii) assist University in structuring multiple start dates in a way that also assures financial aid eligibility; and

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- (iii) introducing best practices for the delivery of an online Curriculum.
- **E.** Recruiting and Enrollment Specialist Representatives ("ESRs"). ESRs will serve as a primary point of contact for all prospective students for identified Programs. The ESRs will help educate students about the University's Programs. AP's responsibilities include:
  - (i) staffing and equipping a call center for ESRs;
  - (ii) providing a team of ESRs to contact potential students once a lead is received;
  - (iii) providing a toll free number and website for prospective students;
  - (iv) recruiting in compliance with federal law and the academic standards of the University; and
  - (v) informing potential students of the Program characteristics and referring potential students to the University regarding financial aid and/or academic questions.

AP agrees that in the course of recruitment of Students for enrollment in one or more Online Educational Courses it will not provide any commission, bonus or other incentive payments based directly or indirectly upon success in securing enrollments to any person or entity engaged in any student recruiting or admission activities, or any person directly supervising such person, except in accordance with the provisions of 34 C.F.R. 668.14(b)(22)(2003) and any subsequent amendment thereto, and/or any other requirement of the United States Department of Education or the University's regional accreditor.

- F. Application Support. ESRs will:
  - (i) inform applicant of all University application requirements;
  - (ii) contact applicants regarding upcoming Program deadlines;
  - (iii) remind applicants to submit necessary paperwork (transcripts, etc.);
  - (iv) remind Students of the registration process, registration deadlines and payment deadlines once admitted to the University; and
  - (v) refer Students to appropriate University resources if there are further questions about the Program(s).

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- **G. Student Services.** ESRs will provide retention services, including, but not limited to the following:
  - (i) following up with Students periodically to ensure satisfaction continuing through graduation;
  - (ii) referring Students to University resources if academic questions persist;
  - (iii) welcoming new Students and provide upcoming registration dates and/or deadlines;
  - (iv) re-engaging inactive Students; and
  - (v) reminding Students of upcoming start dates, registration deadlines and payment deadlines.
- H. Protection of Student Information. The University has informed AP that Student specific information may be protected from disclosure pursuant to the provisions of the Family Educational Rights and Privacy Act (FERPA), (20 U.S.C.§ 123g; 34 CFR Part 99). AP expressly agrees that it shall (i) not disclose any such information to any third parties and (ii) take such measures as are reasonable and prudent to protect such information from inadvertent disclosure.

### **III.** University Obligations

The University shall maintain the sole authority in the (i) appointment of Faculty, (ii) admission of Students, (iii) delivery of Programs, (iv) evaluation of Student performance and (v) decision to award course credit and/or academic credentialing. During the Term of this Agreement, the University shall have the following obligations:

### A. Marketing Deliverables.

- (1) University has a duty to expressly approve or disapprove of marketing materials submitted to it by AP within 10 business days of receipt by University of the materials. AP must seek approval from the University's College of Business and Economics as well as the University's Office of Trademark Licensing and Enforcement. Such approval from the University's Office of Trademark Licensing and Enforcement shall be sought via email at licensing@boisestate.edu. If University does not respond to AP within the 10 day period, AP may assume that the marketing materials are approved;
- (2) University will deliver to AP its branding and style guidelines;
- (3) University will allow AP to use the University web domain for marketing (i.e., <u>http://online.universityname.edu</u> or <u>http://degree.universityname.edu</u>) and host those subdomains for ease of maintenance and updates;

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- **B.** Regulatory Approvals, Accreditations, and Licenses. The University will determine and obtain all necessary regulatory approvals and licenses for the Programs.
- C. Financial/Business Oversight. The University will oversee the financial management of the Programs.
- **D.** Intellectual Property. The University will not remove, deface, or obscure any of AP's or its suppliers' copyright or trademark notices and/or legends or other proprietary notices associated with the AP Materials.
- E. Access to Data. The University will provide access to Student information data and online delivery data in order for AP to fulfill its obligations under this Agreement.

### IV. License Grants by AP

- **A. AP Resource Materials.** During the Term of this Agreement, AP grants the University a limited, non-exclusive, license to use and modify the AP Resource Materials for the specific and limited purpose of developing Programs.
- **B. Trademarks.** During the Term of this Agreement, AP grants the University a limited, nonexclusive license to use such AP trademarks, as are designated in writing by AP, for the specific and limited purpose of marketing the Programs. **Exhibit B** lists the initial AP trademarks that may be used per this Section.

### V. License Grants by the University

- A. University Materials. During the Term of this Agreement, the University grants AP a limited, non-exclusive license to use and modify the University Materials for the specific and limited purpose of developing Programs.
- B. Trademarks. During the Term of this Agreement, the University grants AP a limited, non-exclusive license to such University trademarks, as designated in writing by the University, solely for the purpose of marketing the Programs. Exhibit C lists the initial University trademarks that may be used per this Section.

### VI. Ownership

- A. Ownership of AP Intellectual Property. AP retains all ownership and Intellectual Property rights in the AP Materials.
- **B. Ownership of University Materials.** The University retains all ownership and Intellectual Property rights in the University Materials.
- C. Ownership of Developed Materials. Any right, title and interest in and to any Intellectual Property arising from or attributed to any of the work or activities

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undertaken as part of this Agreement shall belong to the Party that creates such Intellectual Property, unless mutually agreed otherwise in writing.

### VII. Term

The term ("Original Term") of this Agreement commences on the Effective Date and ends on the fifth (5th) anniversary of the commencement date of the first Program ("Launch Date"), unless terminated under Section XII. The Original Term shall automatically renew for three (3) year periods "Successive Term(s)"), unless terminated by either Party in writing 270 days before the expiration of the then current Original Term or Successive Term. To the extent that an Addendum to this Agreement is entered into for a new Program, the term of such Addendum shall also be for a period of five (5) years ("New Term") notwithstanding the fact that the New Term could exceed the period of the Original Term or the Successive Term. In the event of a New Term, all provisions of this Agreement shall remain in full force and effect for the duration of the New Term and any renewals thereafter.

### VIII. Payment and Taxes

- A. AP Revenue. The University will collect all Revenue and will remit to AP the AP Revenue, which shall be due and payable to AP within thirty (30) days of the start of any Online Educational Course.
- **B.** Taxes. Each Party will be responsible for any and all taxes due on their portion of Revenues received.
- C. Acknowledgement by the University. The University acknowledges that a significant portion of AP's cost is incurred before a Student enrolls, and that AP's only method of cost recovery is through the continuing payments as a Student progresses through the Program. Therefore, for each Student who AP secures the enrollment of during the Term of this Agreement, the University will continue to remit payments to AP per Section VIII A above for so long as the Student continues to take On Line Educational Courses at the University, even if beyond the termination date of this Agreement.

### IX. Indemnification

A. AP. AP will defend and indemnify the University, to the extent permitted by Texas law, against a claim that any AP Materials furnished by AP infringes a third party 's copyright, provided that: (a) the University notifies AP in writing within 30 days of the claim; (b) AP has sole control of the defense and all related settlement negotiations; and (c) the University provides AP with the assistance, information, and authority reasonably necessary to perform the above; reasonable out-of-pocket expenses incurred by the University in providing such assistance will be reimbursed by AP.

AP/Master Service Agreement - Page 7

- **B.** University. The University will defend and indemnify AP, to the extent permitted by the laws of Idaho, against a claim that any University Materials furnished by the University infringes a third party's copyright, provided that: (a) AP notifies the University in writing within 30 days of the claim; (b) the University has sole control of the defense and all related settlement negotiations; and (c) AP provides the University with the assistance, information, and authority reasonably necessary to perform the above; reasonable out-of-pocket expenses incurred by AP in providing such assistance will be reimbursed by the University.
- C. Remedies. In the event that some or all of the AP Materials is held or is believed by AP to infringe third party rights, AP shall have the option, at its expense to: (a) modify the AP Materials to be non-infringing; or (b) obtain a license from the third party to continue using that portion of the AP Materials that is infringing the rights of such third party. If it is not commercially feasible to perform either of the above options, then AP may require the University to return the infringing AP Materials and all rights thereto. Upon return of the infringing AP Materials to AP, the University may terminate this Agreement with 10 days' written notice.

### X. LIMITATION OF LIABILITY

# NEITHER PARTY SHALL BE LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES.

### XI. Warranties

- **A. Authority.** Each Party warrants, to the best of its knowledge, that it has the authority to enter into the Agreement and to perform its obligations set forth herein.
- **B. Ownership by AP.** AP warrants that it is the sole and exclusive owner of all AP Materials or has the license to use and sub-license any Intellectual Property owned by third parties and incorporated into such AP Materials, and that, to the best of its knowledge; such AP Materials does not infringe any third-party rights.
- C. Ownership by the University. The University warrants that it is the sole and exclusive owner of all University Materials or has the license to use and sub-license any Intellectual Property owned by third parties and incorporated into the University Materials, and that, to the best of its knowledge, the University Materials does not infringe any third-party rights.

### XII. Termination

- **A. Material Breach.** If either Party materially breaches the terms of this Agreement and fails to correct the breach within 60 days after the non-breaching Party provides written notification, the non-breaching Party may terminate this Agreement.
- **B.** Termination for Convenience. University may terminate agreement program addendum at any time and for any reason with 2 years' written notice to AP. If University exercises this Termination for Convenience provision, University agrees

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that it will not contract with another service company for similar services for Programs covered by this Agreement before the natural termination date of this agreement (5 years after the Effective Date).

- **B.** University's Obligations. Upon expiration or termination of this Agreement, University shall cease all use of AP Materials and return any such material in its possession to AP.
- C. AP's Obligations. Upon expiration or termination of this Agreement, AP shall cease all distribution of University Materials and return any such material in its possession to the University, provided that AP shall have the right to continue to use the University Materials for the sole purpose of permitting Students then enrolled in a Program to complete such Program.

### XIII. General

- A. Relationship Between the Parties. Each Party is an independent contractor and will be solely responsible for payment of all compensation owed to its employees, as well as employment related taxes. Each Party will maintain appropriate worker's compensation for its employees as well as general liability insurance. Neither this Agreement, nor any terms and conditions contained herein, shall be construed as creating a partnership, joint venture, agency or franchise relationship.
- **B. Governing Law and Jurisdiction.** This Agreement and any dispute or claim arising out of or in connection with it or its subject matter or formation (including non-contractual disputes or claims) shall be governed by and construed in accordance with Idaho law. The Parties irrevocably agree that the courts of Ada County, Boise, Idaho shall have exclusive jurisdiction to settle any dispute or claim that arises out of or in connection with this Agreement or its subject matter or formation (including non-contractual disputes or claims).
- C. Notice. All notices, including notices of address change, required to be sent hereunder shall be in writing and shall be deemed to have been given when mailed by certified mail to:

If to AP:

Academic Partnerships, LLC Attention: Chief Financial Officer 600 North Pearl Street Suite 900 Dallas, Texas 75201

With copy to:

Academic Partnerships, LLC

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Attn: Legal Dept. 2200 Ross Ave., Suite 3800 Dallas, TX 75201 FAX No. 214-438-4133

If to the University:

Boise State University Attn: Kirk Smith 1910 University Drive Boise ID 83725

With copy to: Boise State University Office of the General Counsel 1910 University Drive Boise, Idaho 83725-1002

The Parties agree that they each may treat documents faxed and/or email attachments and/or a signature sent electronically by the other Party as original documents; nevertheless, either Party may require the other to exchange original signed documents.

- **D.** Severability. In the event any provision of this Agreement is held to be invalid or unenforceable, the remaining provisions of this Agreement will remain in full force.
- E. Waiver. The waiver by either Party of any default or breach of this Agreement shall not constitute a waiver of any other or subsequent default or breach. Except for actions for nonpayment or breach of either Party's intellectual property rights, no action, regardless of form, arising out of this Agreement may be brought by either Party more than two years after the cause of action has accrued.
- **F. Headings.** The headings appearing in this Agreement are inserted for convenience only, and will not be used to define, limit or enlarge the scope of this Agreement or any of the obligations herein.
- **G. Counterparts.** This Agreement may be executed in any number of counterparts, each of which, when executed and delivered, shall be an original, and all the counterparts together shall constitute one and the same instrument.
- H. Confidential Information. Each Party agrees that it shall not use or disclose to any third party, except for the purpose of performing this Agreement, any business and technical information of the other Party which, in the exercise of reasonable judgment, should be recognized by such Party as confidential ("Confidential Information"). The obligation of confidentiality shall not apply to information which: (a) is or becomes part of the public domain through no fault of the receiving Party; (b) is furnished by the disclosing Party to others without

AP/Master Service Agreement - Page 10

restrictions on use and disclosure; (c) becomes known or available to the receiving Party without restriction from a source other than the disclosing Party without breach of any Agreement with the disclosing Party; (d) is disclosed with prior written approval of the disclosing Party; (e) is independently developed by the receiving Party without the use of any Confidential Information; (f) is previously known to the receiving Party on a non-confidential basis; or (g) is required by the Idaho Public Records Law, a court order, or a government agency to be disclosed, in which case, the receiving Party shall give the disclosing Party as much notice as is reasonably practical so that the disclosing Party, in its sole discretion, may elect and the receiving Party shall reasonably cooperate with the disclosing Party in disclosing Party's efforts to obtain such order or protection.

- I. Force Majeure. Neither Party will be liable for delays or failure in its performance hereunder to the extent such delay or failure is caused by any act of God, war, natural disaster, strike, lockout, labor dispute, work stoppage, fire, third-Party criminal act or act of government, or any other event beyond the reasonable control of that Party (an "Excusable Delay"). This Agreement may be terminated with written notice by either Party under this section should the Excusable Delay of the non-performing Party continue for more than 30 days.
- J. Entire Agreement. This Agreement with any documents referred to in it constitutes the entire agreement and understanding between the Parties and supersedes any previous agreement between them relating to the matters set forth herein.
- K. Successors and Assigns. This Agreement will be binding upon, and will inure to the benefit of, the permitted successors and assigns of each Party hereto. Neither party may assign, this Agreement or any of its rights hereunder without the prior written consent of the other party, which shall not be unreasonably withheld, and any attempted assignment without such consent shall be void.
- L. Variation. No variation of this Agreement or of any of the documents referred to in it shall be valid unless it is in writing and signed by or on behalf of each of the Parties.
- M. Survivability. The following Sections shall survive the expiration and termination of this Agreement: III.C, VI, VIII, IX, X, XI, XII, and XIII.

[Signature

Page

Follows]

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ACADEMIC PARTNERSHIPS, LLC	BOISE STATE UNIVERSITY
Signature: MM 1115	Signature: <u>Spa Pearn</u> Name: <u>Stacy Pearn</u>
Title: CFO	Title: $VPFA$ Date: $16-24-12$

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r MS EXHIBIT A **ADDENDUM** 

This Addendum ("Addendum") dated as of September 15, 2012, is a supplement to that certain Service Agreement ("Agreement") dated as of September 15, 2012 between Academic Partnerships, LLC ("AP"), and Boise State University (the "University") and is fully incorporated therein.

1. NAME OF PARTICIPATING SCHOOL OR COLLEGE: College of Business and Economics

2. EFFECTIVE DATE OF PROGRAM: Upon receipt of approval by the Idaho State Board of Education and signature by the University's Vice President of Finance and Administration.

3. PROGRAMS AND/OR DEGREES: Master in Business Administration

4. AP REVENUE PERCENTAGE: 45% of the total Revenue for the MBA. Once the Parties execute an addendum for two additional Programs, the AP Revenue Percentage for the MBA will change to 40% and the two new Programs will be 45%

ACADEMIC PARTNERSHIPS, LLC
Signature:
Name: Michael J. Briskey
Title: CFO
Date: 10-15-12

### **BOISE STATE UNIVERSITY**

$\sim$
Signature: Lac Pequer
Name: Stacy Peakson
Title: VPFA
Date: $10 - 24 - 72$

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## EXHIBIT B

(AP Trademarks, including those of its affiliates)

- ACADEMIC PARTNERSHIPS, LLC ACADEMIC PARTNERSHIPS 1.
- 2.
- 3. AP



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## EXHIBIT C

## (University Trademarks)

The then current University academic logo as provided by Boise State's Office of Trademark Licensing. Please contact <u>licensing@boisestate.edu</u>.

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## SUBJECT

Board Policy III.V. Statewide Articulation and Associate Degree and Board Policy III.N. Private, In-State, Out-of-State – Second Reading

## REFERENCE

October 2012	The Board approved the first reading of III.V. and III.N.
August 2011	The Board approved the second reading of III.V.
June 2011	The Board approved the first reading of III.V.
June 2007	The Board reviewed amendments to Board Policy III.N. The Board did not approve the changes.
September 2000	The Board approved the second reading of III.N.
June 2000	The Board approved the first reading of III.N.

## APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.V. Statewide Articulation and Associate Degree

Idaho State Board of Education Governing Policies & Procedures, Section III.N, Private, In-State, Out-of-State, Non-Accredited Institutions, and Other Educational Source Offerings Section 33-107(6), Idaho Code

## BACKGROUND/DISCUSSION

Board Policy III.V, Statewide Articulation and Associate Degree provides for the facilitation of credit transfer and also includes the Board's general education core requirements.

With increasing demand for accountability and concerns regarding alignment and transfer in an ever-changing world, the Council for Academic Affairs and Programs (CAAP) commissioned a group of key educational leaders from all eight public institutions and charged them with evaluating the Leveraging Educational Assistance Partnership (LEAP) Program framework. This taskforce was also charged with addressing concerns regarding credit transferability due to the changes in delivery of general education studies at Boise State University (BSU) and the University of Idaho (UI).

Amendments to Board Policy III.V are proposed to allow flexibility in the six credits required of the general education core that are not assigned to a specific discipline. These changes will allow for flexibility as the State General Education Core Reform Taskforce proposes new approaches to general education program design and assessment to address the needs of other stakeholders. General

education reform work requires a faculty-driven process that identifies an explicit core of learning outcomes within shared, discipline-specific competency areas. Transferability across institutions is central to general education reform and the establishment of common learning outcomes and competencies. The ability to map and assess learning outcomes and competencies across institutions will play a key role in general education reform. Because BSU and the UI have already begun campus-level general education reform, the modifications to Policy III.V. will allow for ease of transfer across public institutions as the State General Education Reform Taskforce continues its analysis and development of a recommended framework. The work will begin with a focus on the core of general education as that is the foundation for all degrees. It is expected that when a new framework is developed, the taskforce will bring forward their recommendations to the Board for approval, which would result in further changes to Board Policy III.V.

Changes to this policy also include incorporating sections of Board Policy III.N regarding the acceptance of credit from registered postsecondary educational institutions and proprietary schools.

Board Policy III.N. Private, In-State, Non-Accredited Institution, and Other Educational Source Offerings sets out the registration requirements for proprietary schools and postsecondary educational institutions who wish to offer courses, courses of study or degree's within the state and touches on how public postsecondary institutions should treat credit transfer from these schools and institutions. Chapter 24, Title 33, Idaho Code sets out the registration requirements for proprietary schools and postsecondary educational institutions and establishes the Board's authority to manage the registration process. Additional clarifying procedures regarding the registration process are outlined in IDAPA 08.01.11. There have been a number of changes to Idaho Code and the rules since April of 2002 when III.N. was last updated. Additionally, the Board's authority over institutions not under its governance or oversight are regulated through Idaho code and IDAPA rule and those entities the Board has governance over are regulated through Board policy. As such Board Policy is no longer in compliance with Idaho code or IDAPA rule and is redundant to the regulations set out within them. As such Board Policy III.N. should be repealed in its entirety. The language within the policy that touches on the transfer of credits to our public postsecondary institutions is being moved to III.V., Articulation and Transfer (previously titled Articulation and Associate Degree Policy).

After further discussion with Board members, additional changes were made from the first reading of Board Policy III.V. to include adding definitions of interdisciplinary courses and foundational courses. The changes that were made are indicated on page 12.

## IMPACT

Amendments to Board Policy III.V allow for flexibility as the State General Education Core Reform Taskforce looks at general education with new approaches to program design and assessment. Changes also include the incorporation of transfer language that was previously included in III.N.

### **ATTACHMENTS**

Attachment 1 – Board Policy III.N., Private, In-state, Out-of-state,		Page 5
	Non-Accredited Institution and Other Educational	
	Source Offerings Proposed Amendments	
Attachment 2 -	Board Policy III.V., Statewide Articulation	Page 11
	and Associate Degree Proposed Amendments	-

## STAFF COMMENTS AND RECOMMENDATIONS

Amendments to Board Policy III.V will allow for flexibility with current practice, and allow the Taskforce to continue its work with the general education reform initiative. Staff would like to emphasize that as the Taskforce formalizes their recommendations, there will be significant amendments to Board Policy III.V. for the Board's consideration.

Board staff recommends approval of both policies as presented.

## **BOARD ACTION**

I move to approve the second reading of amendments to Board Policy III.N. Private, In-state, Out-of-state, Non-Accredited Institution and Other Educational Source Offerings as presented.

Moved by \_\_\_\_\_ Seconded by \_\_\_\_\_ Carried Yes \_\_\_\_\_ No \_\_\_\_

AND

I move to approve the second reading of the amendments to Board Policy III. V. Statewide Articulation and Associate Degree as presented.

Moved by \_\_\_\_\_ Seconded by \_\_\_\_\_ Carried Yes \_\_\_\_\_ No \_\_\_\_

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SECTION: III. POSTSECONDARY AFFAIRS

N. Private In-State, Out-of-State, Non-Accredited Institutions, and other Educational Source Offerings April 2002

1. Statutory Authority

Section 33-107(6), Idaho Code, establishes as a general power and duty of the Board the maintenance of a register of courses and programs offered anywhere in the state of Idaho by postsecondary institutions that are: a.) located outside the state and are offering courses or programs for academic credit or otherwise; or b.) located within the state of Idaho but not accredited by a regional or national accrediting agency recognized by the Board and are offering courses for academic credit. The acceptance of academic or non-academic credit at public postsecondary institutions in Idaho is the prerogative of the Board. In addition, Chapter 24, Title 33, Idaho Code, establishes requirements for registration, agent's permit, purchase statement, surety bond and student tuition recovery account.

- 2. Register of Accredited In-State and Out-of-State Institutions
  - a. Maintenance of Register

A register of courses and programs is maintained at the Office of the State Board of Education. The Office will establish written procedures, available upon request, for compliance with the requirements of Section 33-107(6), Idaho Code. Accredited institutions are exempt from Chapter 24, Title 33, Idaho Code.

- b. In-State Accredited Institutions
- (1) Regional Accreditation Bodies (III.M. Accreditation)
  - An in-state institution (i.e., is physically located in Idaho) accredited by one of the six (6) regional accreditation agencies (see Section III, Subsection M) is exempt from registering with the Office of the State Board of Education. Furthermore, credits awarded by one of the six regional accreditation agencies will be accepted by the State Board of Education and transferable into Idaho's public postsecondary system.
  - (2) Non-Regional Accreditation Agencies

The State Board of Education also recognizes those national accreditation agencies approved by the U.S. Department of Education.

Private in-state institution(s) that are accredited by one (1) of these national accreditation bodies are exempt from registering with the Office of the State Board of Education. However, the acceptance of programs and/or credits is not assured. Those institutions that wish to have their programs and/or credits accepted that the Board, and hence, the public colleges and universities, must forward an application to the Office of the State Board of Education.

SECTION: III. POSTSECONDARY AFFAIRS

N. Private In-State, Out-of-State, Non-Accredited Institutions, and other Educational Source Offerings April 2002

The Board's Instruction, Research and Student Affairs Committee or its designee will evaluate the application submitted by private, in-state, non-regionally accredited institutions. The evaluation will follow the identical standards by which the State Board of Education evaluates its own public postsecondary institutions. Should the program(s) or course(s) be evaluated as comparable to a program(s) or course(s) offered by an Idaho public institution, it will be accepted by the State Board of Education and hence transferable into the public postsecondary system. Those program(s) and course(s) that are not comparable will not be accepted by the State Board of Education and will not transfer to those institutions under their governance.

The State Board of Education, through its IRSAC, shall set program and course evaluation fees, and any impact fees.

c. Out-of-State Accredited Institutions

A registration form/application must be submitted by any Board recognized accredited out-of-state institution to the State Board of Education. Critical evaluation of each of the components of such offerings as compared with courses, programs, credit awarded, and faculty of postsecondary institutions under governance of the Board will be accomplished by the Board's Instruction, Research and Student Affairs Committee or its designee. Should the course be evaluated as comparable to a course offered by an Idaho institution, it will be designated as "comparable" on the registration form; should the course not be comparable, it will be designated as "not comparable" on the form. Any interested person who makes inquiry concerning such course will be told whether the course is comparable or not comparable to offerings available from Idaho institutions.

Academic credit for courses evaluated as not comparable shall not be accepted by Idaho postsecondary institutions under the direction and control of the Board. Courses or programs evaluated as comparable will be accepted for academic credit by Idaho's public postsecondary institutions and thus shall be fully transferable among the institutions.

The State Board of Education, through its Instruction, Research and Student Affairs Committee, shall set course and program processing fees, an impact fee, and a registration fee.

- 3. Register of Non-accredited Institutions and Other Educational Source Offerings
  - a. Statutory Authority

SECTION: III. POSTSECONDARY AFFAIRS

N. Private In-State, Out-of-State, Non-Accredited Institutions, and other Educational Source Offerings April 2002

- In addition to the powers conferred by Chapter 24, Title 33, Idaho Code, Section 33-107(6) requires the Board to maintain a register of institutions and their courses to be offered anywhere in the state of Idaho by postsecondary institutions which are located outside or within the state of Idaho but not accredited by a regional or national accrediting agency recognized by the Board. Idaho statute does not permit the offering of programs (i.e., degrees) in Idaho by non-accredited institutions. The acceptance of academic and non-academic credit, at public postsecondary institutions in Idaho, is the prerogative of the State Board of Education.
- b. Registration without Acceptance of Credit
  - All trade, correspondence, technical vocational or other schools with a physical presence in Idaho and not accredited by an accrediting agency recognized by the Board must register with the Board. In addition to the requirements of Chapter 24, Title 33, Idaho Code, the registration will include:
    - (1) The applying institution shall provide the following: (a) a current financial statement with an opinion audit prepared by a certified public accountant; (b) a description of instructional methods used by the institution including mission statements, methods for assigning, monitoring and evaluating work, design of curriculum, and awarding credit; and (c) submission of credentials for faculty, including the submission of official copies of academic transcripts, verification of educational degrees attained and description of courses taught by that individual.
    - (2) Restrictions against an institution's awarding credit, earned or honorary, primarily on the basis of: (a) payment of tuition or a fee, (b) credit earned at another school, (c) credit for life experience or other equivalency, (d) testing out of required course work, (e) research and writing, or (f) any combination of the foregoing.
    - (3) Performance/Surety Bond: The performance/surety bond, based upon Idaho student enrollment will be as follows:
      - \$25,000 -- less than 50 students;
      - \$50,000 -- 50 to 99 students; or
      - \$100,000 -- 100 or more students

Chapter 24, Title 33, Idaho Code provides for an exemption for those applicants who can demonstrate through such means as a CPA audit that the institution's annual tuition received is less than \$10,000 per year. In that case, the performance/surety bond will be \$10,000 per year.

SECTION: III. POSTSECONDARY AFFAIRS

N. Private In-State, Out-of-State, Non-Accredited Institutions, and other Educational Source Offerings April 2002

c. Registration with Acceptance of Credit

A non-accredited in-state or out-of-state institution or educational source with a physical presence in Idaho desiring to have its academic or non-academic courses accepted by the Board and the Idaho public postsecondary institutions, must submit each course or workshop request to be offered in Idaho to the Board's Academic Affairs and Program Committee for critical evaluation and review. The AAPC shall establish an evaluation and review process in compliance with Section 33-107(6), Idaho Code, Chapter 24, Title 33, Idaho Code and the AAPC *Guidelines for Program Review and Approval*. The registration will include:

- (1) On-site visit requirements (in-state campus, and/or out-of-state home (main) campus or sending site) not less than once every five (5) years. The on-site visitation shall be conducted by a representative of the State Board of Education (SBOE) and may occur more frequently at the Board's discretion. The registered institution is required to pay the costs of the inspection and visitation by Idaho authorities.
  - (2) Should the course or workshop be evaluated as acceptable or comparable to a course or workshop offered by an Idaho institution, it will be accepted for academic or non-academic credit by the SBOE and thus be accepted by the public postsecondary institutions in Idaho.
- (3) Academic or non-academic credit evaluated as non-acceptable or not comparable shall not be accepted by Idaho's public postsecondary institutions.
- (4) Course or workshop fees for the evaluation, processing, registration, and impact will be set by the Board through its Academic Affairs and Program Committee and established in Administrative Rules.
- 4. Referral to the Attorney General

Section 33-107(6), Idaho Code, requires establishment of criteria consistent with generally accepted professional standards relating to use of false or misleading advertising, solicitations, or false promises of employment. The Academic Affairs and Program Committee evaluates each registration of an out-of-state institution or an in-state non-accredited institution for compliance with such generally accepted standards and submits to the Board a recommendation that the office of the attorney general be notified of any violation. The Board itself must forward any such requests for action on violations to the office of the attorney general.
# Idaho State Board of Education GOVERNING POLICIES AND PROCEDURES

#### SECTION: III. POSTSECONDARY AFFAIRS

N. Private In-State, Out-of-State, Non-Accredited Institutions, and other Educational Source Offerings April 2002

### 5. Interpretations

- a. Non-credit or continuing education courses are subject to compliance with Section 33-107(6), Idaho Code, if offered in Idaho by an accredited out-of-state institution or an in-state or out-of-state non-accredited institution.
- b. Accredited out-of-state institutions and non-accredited institutions, either in-state or out-of-state, or their agents or representatives, are exempt from compliance with Section 33-107 (6), Idaho Code, if the courses or programs are offered at a U.S. military installation solely for military personnel.
  - c. For purposes of this policy, a non-accredited postsecondary institution or educational source shall be deemed to have a physical presence in Idaho if it owns, rents, leases, or uses any office or other physical location in Idaho from which it, or its representatives sells, offers for sale, or distributes any course or courses for academic credit or otherwise.
  - d. Academic credits from in-state accredited institutions will be accepted within Idaho's higher education system with the exception of religious, a vocational or recreational, private vocational courses sponsored by an employer for the training or preparation of its own employees, and aviation schools/instructors under the supervision of the federal aviation administration. Further, intensive review courses designed to prepare students for certified public accountancy tests, law school aptitude tests, bar examinations, graduate record exams, or medical admission tests will be exempt in accordance with Section 33-2402, Idaho Code.
- c. Authority is delegated to the postsecondary institutions under the Board's governance to evaluate and accept credits on behalf of transferring students who have earned those credits from any out-of-state accredited institution or from any non-accredited institution or other educational source. However, if the Board has previously approved credits for courses and programs, those credits are transferable among all Idaho public institutions. Notwithstanding the foregoing, an institution may deny credit transfer to comply with specialized accreditation requirements, or in unique degree requirements.
- f. Credits accepted by one institution under the Board's governance are transferable by the student to any other postsecondary institution under the Board's governance.

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# Idaho State Board of Education GOVERNING POLICIES AND PROCEDURES SECTION: III. POSTSECONDARY AFFAIRS SUBSECTION: V. Articulation and Associate Degree PolicyTransfer

August 2011December 2012

#### 1. Statewide Articulation

#### a. Associate of Arts and Associate of Science Degrees

To facilitate the transfer of students, Boise State University, Idaho State University, Lewis-Clark State College, the University of Idaho, the College of Southern Idaho, North Idaho College, and the College of Western Idaho, shall individually and jointly honor the terms of this statewide articulation policy.

Students who complete requirements for the Associate of Arts or Associate of Science degree at an accredited institution in Idaho and Treasure Valley Community College will be considered as satisfying the lower division general education core requirements and shall be granted junior standing upon transfer to a four-year public institution in Idaho and will not be required to complete any additional lower division general education core courses subject to the conditions listed below.

Transfer students from any in-state or out-of-state academic accredited institution who have completed the equivalent of the State Board of Education's general education core for the Associate Degree will not be required to complete additional lower division general education core courses. However, these students must obtain certification of such completion. Certification of successful completion of the lower division general education core for students who have not completed the Associate of Science or Associate of Arts degree is the responsibility of the transferring institution.

This transfer policy will provide for the fulfillment of all general education, lower division core requirements only. It is not intended to meet specific course requirements of unique or professional programs (e.g., engineering, pharmacy, business, etc.). Students who plan to transfer to unique or professional programs should consult with their advisors and make early contact with a program representative from the institution to which they intend to transfer.

Transfer students who have not completed the Associate of Arts or Associate of Science or the general education core courses will not come under the provision of this articulation policy.

A maximum of seventy (70) lower division credit hours or one-half of the total credits required for a student's intended baccalaureate degree, whichever is greater, will normally be accepted for transfer from accredited community or junior colleges.

# Idaho State Board of Education GOVERNING POLICIES AND PROCEDURES SECTION: III. POSTSECONDARY AFFAIRS SUBSECTION: V. Articulation and Associate Degree PolicyTransfer

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#### b. Associate of Applied Science Degrees

Students who complete all or a portion of the State Board of Education's general education coursework for the Associate of Applied Science degree at one of the public postsecondary institutions in Idaho may fully transfer those completed general education core courses into an academic program. However, professional-technical transfer students who have not completed any courses under the general education core will not be covered under the provisions of this articulation policy.

#### 2. Transfer Associate Degree

The lower division 100 and 200 level general education core requirement must fit within the following thirty (30) credit and course requirements and must have a minimum of thirty-six (36) credit hours. The remaining six (6) credits may come from the disciplines listed below, interdisciplinary courses, or foundational program courses.

Interdisciplinary courses integrate coursework from different academic areas and provide students an opportunity to engage in learning through inquiry while drawing on knowledge from multiple fields.

<u>Foundational program courses integrate a disciplinary lens approach to the curriculum,</u> <u>serve as an academic introduction to the kinds of inquiry that are required for college</u> <u>learning, build problem solving skills, and identify student learning outcomes.</u>

#### State Board of Education General Education Core:

		Required Courses	Minimum Credits
а	<ul> <li><u>Communications</u></li> <li>Coursework in this area enhances students' ability to communicate clearly, correctly, logically, and persuasively in spoken English.</li> <li><u>Disciplines:</u> Speech, Rhetoric, and Debate</li> </ul>	1	2
b	<ul> <li>English Composition         In meeting this goal, students must be able to express themselves in clear, logical, and grammatically correct written English. Up to six (6) credits may be exempt by ACT, SAT, CLEP or other institution accepted testing procedure.         *3 or 6 credit hours depending upon initial placement results.     </li> </ul>	1	3 to 6*
С	<ul> <li><u>Behavioral and Social Science</u></li> <li><u>Coursework in this area provides instruction in:</u> (1) the history and culture of civilization; (2) the ways political and/or economic organizations, structures and institutions function and influence thought and behavior; and (3) the scientific method as it applies to social science research.</li> <li><u>Disciplines</u>: Anthropology, Economics, Geography, History, Political Science, Psychology and Sociology.</li> <li>Note: Courses must be distributed over two (2) different disciplines.</li> </ul>	2	6

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<ul> <li>d. <u>Humanities, Fine Arts, and Foreign Language</u> Coursework in this area provides instruction in: (1) the creative process; (2) history and aesthetic principles of the fine arts; (3) philosophy and the arts as media for exploring the human condition and examining values; and (4) communication skills in a foreign language. <u>Disciplines</u>: Art, Philosophy, Literature, Music, Drama/Theater, and Foreign Languages.</li> </ul>	2	6
<ul> <li>e. <u>Natural Science</u>         Coursework in this area: (1) provides an understanding of how the biological and physical sciences explain the natural world and (2) introduces the basic concepts and terminology of the natural sciences.         <u>Disciplines:</u> Biology, Chemistry, Physical Geography, Geology, and Physics.         Note: Courses may be distributed over two (2) different disciplines and must have at least one (1) accompanying laboratory experience.</li> </ul>	2	7

		Required Courses	Minimum Credits
<ul> <li>f. <u>Mathematics</u>         Coursework in this area is intended to devel         skills in the use of space, numbers, symbols         apply mathematical skills to solve problems.         <u>Disciplines</u>: College Algebra, Calculus, Finite</li> </ul>	op logical reasoning processes; , and formulas; and the ability to e Mathematics, and Statistics.	1	3

#### 3. Associate of Applied Science Degree.

This professional-technical degree requires a minimum of 15 credit hours of general education coursework selected from each institution's general education core and is comparable to the general education core of the Associate of Arts (A.A.) and Associate of Science (A.S.) degrees. The courses completed from the general education core of the A.A.S. will be fully transferable to the A.A., A.S., and baccalaureate degrees.

		Required	Minimum
		Courses	Credits
a.	English/Communication In meeting this goal, students must be able to express themselves in clear, logical, and grammatically correct written English. <u>Disciplines:</u> English 101 required, English 102 or Communication 101; An Applied English or Technical Writing course may be used if found to be comparable to ENGL 102.	2	6
b.	<u>Mathematics/Computation</u> Coursework in this area is intended to develop logical reasoning processes; skills in the use of space, numbers, symbols, and formulas; and the ability to apply mathematical skills to solve problems. <u>Disciplines:</u> College Algebra, Calculus, Finite Mathematics and Mathematical Statistics. An Applied Mathematics course may be used if found to be comparable to a traditional mathematics course.	1	3
C.	Social Science/Human Relations Coursework in this area provides the student with the skills needed for understanding individuals in the work place and the functioning of thought and behavior. <u>Disciplines:</u> Human Relations, Psychology, and Sociology	1	3

## ATTACHMENT 2

## Idaho State Board of Education **GOVERNING POLICIES AND PROCEDURES** SECTION: III. POSTSECONDARY AFFAIRS SUBSECTION: V. Articulation and Associate Degree PolicyTransfer

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d.	Elective		
	Coursework in this area may come from any general education core	e 1	3
	requirement as listed in III.V.2.		

- 4. Authority is delegated to the postsecondary institutions under the Board's governance to evaluate and accept credits on behalf of transferring students who have earned those credits from any out-of-state accredited institution or from any non-accredited institution or other educational source. However, if the Board has previously approved credits for courses and programs, those credits are transferable among all Idaho public institutions. Notwithstanding the foregoing, an institution may deny credit transfer to comply with specialized accreditation requirements, or in unique degree requirements.
- Credits accepted by one institution under the Board's governance are transferable by the student to any other postsecondary institution under the Board's governance.

## SUBJECT

Board Policy III.AA. Accountability Oversight Committee – Second Reading

## REFERENCE

October 2012	The Board approved the fist reading of proposed changes to Board Policy III.AA.
April 2010	The Board approved the second reading of Board Policy III.AA.
February 2010	The Board approved the first reading of Board Policy III.AA.

## APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.AA. Accountability Oversight Committee

## BACKGROUND/DISCUSSION

Board Policy III.AA., Accountability Oversight Committee, outlines the membership and responsibilities of the Board's Accountability Oversight Committee. The Board's Accountability Oversight committee is an ad hoc committee of the Board and is staffed by the Board's Accountability Program Manager. The committee is responsible for reviewing and making recommendations on the results of the statewide assessments, and producing an annual report of student achievement to the Board.

The proposed changes to this policy would strike the language requiring a recommendation from the Governor's office prior to filling a vacancy of one of the four (4) previously Governor recommended positions.

Staff have received no comments regarding the proposed change to this policy. There have been no changes between the first and second reading.

## IMPACT

The proposed change would give the Board greater flexibility in filling vacant or expired positions on the committee in a timely manner. Recommendations may still be given by the Governor or the Governor's staff, however, if they do not have a recommendation the Board will be able to move forward in filling vacant positions.

## **ATTACHMENTS**

Attachment 1 – Board Policy III.AA., Accountability Oversight Committee Page 3

## STAFF COMMENTS AND RECOMMENDATIONS

Amendments to Board Policy III.AA. will allow for the Board to fill vacant positions in a more timely manner while still allowing for the Governor to make recommendations should he desire. Staff received no concerns regarding this change from the Governor's office. Board staff recommends approval of the policy as presented.

## **BOARD ACTION**

I move to approve the second reading of policy amendments to Board Policy III. AA. Accountability Oversight Committee as submitted.

Moved by \_\_\_\_\_ Seconded by \_\_\_\_\_ Carried Yes \_\_\_\_\_ No \_\_\_\_

## Idaho State Board of Education **GOVERNING POLICIES AND PROCEDURES** SECTION: III. ACADEMIC AFFAIRS SUBSECTION: AA. Accountability Oversight Committee April 2010December 2012

1. Overview

The Accountability Oversight Committee will function as an ad hoc committee of the Idaho State Board of Education and be staffed by the Board's Accountability Program Manager.

- 2. Duties and Responsibilities
  - a. Provide recommendations to the Board on the effectiveness of the statewide student achievement system and make recommendations on improvements and/or changes as needed.
  - b. Develop and review an annual report of student achievement. This report shall be compiled collaboratively by Board and State Department of Education staff and submitted to the committee for review. The committee will forward the report to the Board with recommendations annually.
- 3. Meetings and Operating Procedures

The committee shall meet twice annually, additional meetings may be called by the Chair as needed.

4. Membership

The committee membership shall consist of:

- Two members of the Idaho State Board of Education, appointed by the Board president;
- The Superintendent of Public Instruction; and
- Four members at large appointed by the Board, one of which will chair the committee, and shall serve a term of one year as chair.
- 5. Terms of Membership

Board members appointed to the committee serve at the pleasure of the president of the Board. Committee members appointed by the Board shall serve two-year terms. An incumbent member may be recommended for re-appointment. All terms shall begin on July 1<sup>st</sup> and end on June 30<sup>th</sup> of the year(s) beginning or ending said term.

Appointments shall be staggered to ensure that no more than two (2) appointments will become vacant in any given year.

An appointee who has reached the end of his or her term shall remain in service as a committee member until re-appointment, or until the appointment of a new member by the Board. Committee officers will be nominated and elected by a vote of the committee. The Superintendent of Public Instruction will serve as an ex-officio member of the committee.

6. Reporting

This committee shall report directly to the Board.

## SUBJECT

Board Policy III.AB. Rural Physician Incentive Program Oversight Committee – Second Reading

#### REFERENCE

October 2012	The Board approved the first reading of proposed changes to Board Policy III AB
June 2010	The Board approved the second reading of Board Policy III.AB.
April 2010	The Board approved the first reading of Board Policy III.AB.

## APPLICABLE STATUTE, RULE, OR POLICY

Section 33-3723 – 33-3725, Idaho code. Idaho State Board of Education Governing Policies & Procedures, Section III.AB. Rural Physician Incentive Program Oversight Committee

### **BACKGROUND/DISCUSSION**

During the 2012 Legislative session changes were made to Idaho statute moving the administration of the Rural Physician Incentive Program to the Department of Health and Welfare's Office of Rural Health. As part of this change, the Rural Physician Incentive Program Oversight Committee was combined with an already existing committee within the Department of Health and Welfare. This move has made Board Policy III.AB. obsolete.

There have been no changes between the first and second reading.

#### IMPACT

The proposed change repeals Board Policy III.AB., eliminating the Rural Physician Incentive Program Oversight Committee policy in its entirety.

#### **ATTACHMENTS**

Attachment 1 – Board Policy III.AB., Rural Physician Incentive Program Oversight Committee

Page 3

## STAFF COMMENTS AND RECOMMENDATIONS

Board staff recommends approval of the policy as presented.

#### **BOARD ACTION**

I move to approve the second reading of amendments to Board policy repealing Section III. AB. Rural Physician Incentive Program Oversight Committee as submitted.

Moved by Seconded by	Carried Yes	_ No
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## Idaho State Board of Education GOVERNING POLICIES AND PROCEDURES SECTION: III. ACADEMIC AFFAIRS SUBSECTION: AB. Idaho Rural Physician Incentive Program

June 2010

#### 1. Overview

The Idaho Rural Physician Incentive Program was developed to encourage primary care physicians to practice in medically underserved areas of Idaho. <u>Sections 33-3723</u>, 33-3724, and 33-3725, Idaho Code establish the authority for the State Board of Education (Board), through an oversight committee, to administer the Idaho Rural Physician Incentive Program, and to assess and collect the rural physician incentive fee.

Idaho Code Section 33-3724 authorizes the Rural Physician Incentive Fund and facilitates payment of qualified educational debts of rural physicians who practice in areas of the state that are medically underserved and that demonstrate the need for assistance in physician recruitment. The fund is funded by fees assessed to all Idaho students participating in the WWAMI (Wyoming, Washington, Alaska, Montana and Idaho) and University of Utah state supported medical education programs.

2. Idaho Rural Physician Incentive Program Oversight Committee

The Idaho Rural Physician Incentive Program Oversight Committee (Oversight Committee) is established per Idaho Code 33-2724 and shall serve under the direction of the Board.

a. Oversight Committee Membership

Committee membership shall have a balanced representation of primary constituent groups within health professions. The committee shall be composed of members from the following organizations:

- i. Idaho Hospital Association
- ii. Idaho Medical Association
- iii. Idaho Osteopathic Association
- iv. Office of Rural Health and Primary Care
- v. The Idaho Area Health Education Center
- vi. Medical Student Program Administrator
- vii. Each Idaho Physician Residency Program receiving State appropriated fund support
- viii. Other appropriate organizations
- b. Nominating Process

The Executive Director shall solicit written nominations of qualified individuals from each of the organizations provided above for committee membership. The Executive Director may select from the nominations or select other qualified individuals to serve on the committee. All selections by the Executive Director are subject to approval by the Board. The list of candidates must be forwarded to the Board for consideration not less than 60 days prior to expiration of the term of committee member, or within 30 days after any vacancy.

#### c. Terms of Membership

Committee members shall serve three-year terms. An incumbent member may be nominated by the committee for re-appointment by the Board, but no member may serve more than three (3) consecutive terms. All terms shall begin on July 1 and end on June 30 of the year(s) beginning or ending said term.

Appointments will be staggered to ensure continuity of operations as members of the Committee complete their initial term of appointment and are reappointed or replaced. An appointee who has reached the end of his or her term shall remain in service as a committee member until reappointment, or until the appointment of a new member is named and approved by the Board. Officers will be nominated and elected by a vote of the committee.

#### d. Elections of Officers

The Committee will elect a Chair, Vice-chair, and Secretary for terms of office of one year. The Chair will call and conduct each meeting of the Committee. In the absence of the Chair, the Vice-chair may call and conduct each meeting. The Chair or Vice-chair will provide a brief oral report after each meeting to the Executive Director. The Committee Secretary will ensure that a brief written summary of each Committee meeting, along with Committee approved actions/recommendations, is forwarded to the Executive Director in a timely manner.

#### e. Operating Procedures

The Committee will meet at the call of the Chair as often as necessary to fulfill Committee responsibilities but not less than twice each calendar year. Time and location of all meetings is at the discretion of Chair based on availability of Committee members. A meeting agenda will be published prior to each meeting and made available to Committee members along with appropriate meeting materials. All meetings will conform to Section, 67-2340-67-2347, Idaho Code, Open Meeting Law.

#### f. Duties of the Oversight Committee

The Committee will solicit qualified physician applicants/eligible areas for participation in the Rural Physician Incentive Program; and select and prioritize

approved physician candidates/eligible areas consistent with the Board approved criteria (see IDAPA 08.01.14, subsections .014 and .016). Awards shall not exceed the amount available in the fund when making award recommendations.

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