

“Big Ideas” Funding Proposal

One-Time Non-Base Investment Proposal: Step 2

Proposal Name: **Culturing Applied Problem Solvers for Today’s Workplace – Launch of Professional Science Master’s (PSM) Degree Programs**

IMPORTANT NOTE TO REVIEWERS REGARDING THIS PROPOSAL

Please note that this proposal represents the collective efforts of six Professional Science Masters (PSM) degree options – each of which could theoretically stand alone without the others. Therefore, we would like to express that we do not view this proposal as an all-or-nothing venture. Details for each program are provided, as well as some “shared expenses.” Therefore, funding could be put in place to fund certain aspects of this proposal if the entire request cannot be met or supported.

1. Provide a description of the project being proposed. (5 points)

A 2011 Feasibility Report completed by Minnesota State Colleges and Universities (MnSCU) indicated that industry sectors need a workforce with both technical and professional skills competencies - and that Professional Science Master’s (PSM) program graduates would be well-suited to meet this demand. PSM degrees are designed to allow students to pursue advanced STEM training, while also developing workplace skills valued by employers. PSM graduates prepare for STEM careers, but come equipped with skills in economics, project management, regulatory policy, statistics, and communications. Following the MnSCU PSM initiative, MSU, Mankato provided FY12 strategic priority funding to further develop and assess PSM options well suited for our university and community of learners. This proposal identifies “Shared Expenses” along with six potential PSM programs. Our proposed PSM programs bring together faculty and industry from various STEM sectors and include:

- | | |
|---|--|
| ✓ <i>Automotive & Manufacturing Eng. Tech.,</i> | ✓ <i>Earth Resources,</i> |
| ✓ <i>Biomedical Sciences,</i> | ✓ <i>Geographic Information Science, and</i> |
| ✓ <i>Built Environment Technologies,</i> | ✓ <i>Information Security and Risk Management.</i> |

These programs will require resources to develop curriculum, initiate marketing, build industry networks, and in some cases launch initial coursework until the program becomes self-sustaining. Across the country, PSM programs are rapidly gaining visibility and reputation – we would like MSU, Mankato to be on the leading edge of PSM program delivery in the Midwest. The following program overviews provide a brief summary of each proposed program.

Automotive and Manufacturing Engineering Technology (AMET): The PSM Program in AMET would focus on adding professional skills course content to the current MS in Manufacturing Engineering Technology. The AMET program would incorporate those same skills into the current MS program and at the same time have tracks that would allow students to focus in either Manufacturing or Automotive.

Biomedical Sciences (Biomed): The Department of Biological Sciences has a strong graduate curriculum with a strong medical and pathological emphasis. Many of the Master’s students are medical school candidates who want to gain research experience prior to the M.D. degree. The Department would like to expand its program to meet the needs of medically-related industries. This proposal offers another option for graduate students while using resources already in place.

Built Environment Technologies (BET): The BET PSM program would be an interdisciplinary study that incorporates planning, design, engineering, construction and maintenance of the built environment. Many projects require a cross section of skills that are typically taught in silos at the undergraduate level. This will be a new academic program including elements of Urban and Regional Studies (planning), Biology (wetlands), geology (soils), environmental engineering (water and wastewater) and construction (sustainable building). The program will be delivered using a hybrid methodology. Classes will meet face to face several times per semester and then continue the work online.

Earth Resources (ER): The proposed PSM in ER provides a solid training in the exploration for and development of geologic resources including petroleum, minerals, and groundwater, augmented by a thorough grounding in Geographic Information Systems (GIS), to be applied in an industry setting. The technical training will be complemented by coursework in Business Management and Communications, and a capstone internship with industry. Minerals, petroleum, and adequate water are critical to an expanding State, national, and global economy, and employers throughout the US and the region (specifically mining and groundwater quality in Minnesota and petroleum in North Dakota) are hiring vigorously.

Geographic Information Science (GISc): Create a PSM in GISc offered at 7700 France tailored to working professionals in the Twin Cities with a standardized 12 month completion timeline with courses offered chiefly evenings and weekends with a group capstone project rather than a traditional thesis. This would be relatively easy to implement as a “related new program” as we already offer both a Graduate Certificate in GISc and an MS in Geography. We would retain our Certificate as the core offering of GISc skills with the “plus” or “professional” courses being provided by pre-existing offerings at 7700 in Public Administration, Urban and Regional Studies, and Business.

Information Security and Risk Management (ISRM): The ISRM PSM seeks to launch a self-sustaining, fully-online, applied Masters degree program in information security, privacy, and risk management. The program is aimed at giving IT professionals the knowledge, skills, and experience needed to help their organizations protect their data and balance IT risks. Information security is not a technology problem; instead, it requires people with a problem-solving can-do attitude who must also speak the language of executives and be well versed in risk-based thinking. The PSM concept is unique in its balance of science core and supporting soft-skills, both of which are critically needed in order to understand and address issues dealing with data security, privacy, and ultimately IT and business risk management.

2. Describe how the project will drive positive transformational change. (5 points)

PSM programs bring together aspects of a MBA and a technical M.S. degree and bring a significant new option to graduate education. PSM programs inherently require multidisciplinary collaboration – increasing interactions among faculty and between faculty and industry. These interactions break down barriers and generate new creativity, employment opportunities, and external funding possibilities. PSM students are applied problem solvers capable of creating and implementing solutions to our most pressing challenges – thereby making them valuable to the local and global markets.

AMET: Recent surveys by the Department along with other national reports identify a need for engineering and technical education to place more emphasis on the “soft skills” including business concepts, communication, leadership and management. In fact, there are new programs coming on line in the area of “engineering management” that have been designed to address this need. MSU can be a leader in this area in the upper midwest. **Biomed:** Industry partnerships are a key component of the MSU “global solutions” initiatives, and also of MnSCU’s Strategic Framework goal to be the “partner of choice to meet Minnesota’s workforce needs”. The proposed graduate programs will usher in a new era of graduate programs designed specifically to meet industry needs, while using many resources already in place. The recruitment of students interested in employment with industry will be markedly improved. Furthermore, the proposed program will strengthen and expand the Department’s ties with industry. **BET:** The interdisciplinary nature of the MAS in BET will create an opportunity for students who have planning, wetlands, geology, engineering and construction management backgrounds to diversify their knowledge base. Employment opportunities are readily available for industry professionals with such a diverse set of skills. **ER:** The mining, petroleum, and groundwater quality industries need technically-advanced workers who understand business priorities and can communicate effectively with stakeholders. Lack of “business sense” and communication skills are common complaints from industry regarding graduates of traditional Geology programs. The graduates of the ER PSM will represent a new breed of resource professional, and MSU Mankato will become known in the resources industries as a leader in the preparation of highly competent leaders. **GISc:** Geospatial technologies are at the cutting edge... of nearly every field of enquiry as well as in the professional world in both the public and private sectors. **ISRM:** The ISRM PSM is part of a larger series of PSM projects that both MSU and MnSCU are very supportive of.

3. Explain how the project addresses student recruitment, retention, persistence, and/or completion or one or more of the 12 Challenges. (10 points)

PSM programs will impact recruitment by providing options that will be attractive to a range of applicants seeking advanced training. PSM programs have high completion rates. Challenge 10 from President Davenport’s address directly benefits from

PSM via an innovative degree that utilizes collaborative approaches to develop students for STEM careers. PSM opportunities can showcase some of our most outstanding programs, expand and support extending learning opportunities, and advance strategic priorities 3-5.

AMET: In addition to the incorporation of “soft skills” courses into the redesigned MS MET program, the project would assist the AMET Department in determining how to offer the program at 7700 France. Currently approximately 60% of the graduate program consists of International on-campus students. The remaining students consist of mostly recently graduated AET students. While there are a few individuals from the area that take advantage of the program, there is certainly a much larger pool of individuals in the Metro area. In fact, several graduates of our program indicate that they have been considering continuing their education and are looking for a program similar to the MS MET. **Biomed:** Initiation of PSM programs, designed with industry input, will attract a new group of students who desire a job with industry. The interaction and collaboration with industry will work to motivate student to complete the program. Most of the current students in the biomedical area of the Biological Sciences graduate program go on to further graduate study. This program is geared toward students with a bachelor’s degree in the biomedical area who are interested in a career in industry. Currently we do not attract many of these students, and hope to recruit a new type of student. **BET:** From the Strategic Vision (2010-2015), one of the three high priority initiatives is to break down the barriers that, “limit traditional universities from achieving the greatest and most positive impact on our world. These include barriers within our institution and barriers that stand between the university and the wider world.” This interdisciplinary programs break down traditional departmental barriers and creates an opportunity to work in a collaborative environment in order to participate in the search for solutions to some of our most challenging problems. **ER:** The program will attract students drawn to high-paying employment in the resources industries. The close interactions with faculty and focus on ‘real world’ application that characterize the proposed PSM are known to maximize student retention. The anticipated audience will likely include early and mid-career professionals (as well as new graduates) who will be strongly motivated to complete the program. The PSM program in general, and the ER PSM in particular, exemplify strong progress in addressing Challenge 10, “...becoming a more prominent institution known for applied research, scholarship and global solutions.” **GISc:** GISc graduates are extremely “employable” and even in the current economy are finding employment opportunities; this is not simple self-assertion. The US Department of Labor notes that the geospatial technology sector is experiencing job growth and will continue to do so well into the future and because of this growth, has created a Geospatial Technology Competency Model. The US Department of Education has declared Geospatial Technologies to be a “Gainful Employment” field. Both the US Departments of Labor and Homeland Security - Immigration and Customs Enforcement (ICE, the former INS) have declared Geospatial Technologies to be a STEM discipline thus providing additional support and recognition. GIScience/Geospatial Technologies include Geographic Information Systems (GIS), Global Positioning Systems (GPS), and Remote Sensing. The Department of Geography at MSU Mankato offers coursework in all aspects. **ISRM:** The ISRM PSM will target a mature student audience at the graduate level. The program is focused on IT professionals looking to switch to an in-demand field and students seeking an applied Masters degree (instead of a MS IT or MS CS).

4. Describe the impact this project will have on students and/or others whom we serve. (10 points)

Industry has indicated that employees are trained sufficiently in either technical or professional skills, but rarely possess sufficient capacities in both. PSM programs are designed to change that and employers have indicated that PSM students have an immediate impact. PSM programs provide an avenue for working adults to secure advanced training - with some programs offered online and/or at 7700 France. Students gain significant experience through interactions with practitioners, internships, and a strong industry-advised coursework foundation. The likelihood of successful employment with industry is markedly improved for the student by the well-designed curriculum, the close collaboration with industry, and the internship component.

AMET: The MSU AMET Industrial Advisory Board has approved the development of this program. The board is made up of members representing: Cummins Power Generation, The Toro Company, MTU Onsite Energy, Jones Metal Products, Carlson Craft among many others. This group represents a wide variety of industries and all have a need for a well trained workforce. **Biomed:** Students will graduate with a combination of knowledge and skills that is highly suited for a successful career in industry. The internships will give students an edge, as they will already have industry experience when they finish their degrees. Industry will gain experienced students that can communicate between the science and technology branches, and the business and management groups. **BET:** The intended audience will be current industry employees who wish to advance their skills in an interdisciplinary environment and recent bachelor’s degree students who recognize their careers will not fit into single silos of information. **ER:** The ER PSM will be of value to students who have completed a traditional BS in Geology or Earth Science, and wish to enter a resource industry at an accelerated pace without having to complete a Master’s thesis. Many industry jobs

require the student to 'shelve' much of the scientific curiosity that was honed through completion of the thesis in order to focus on business priorities, and learn business practices on the job. In contrast, PSM graduates will follow a streamlined pathway into industry, being trained for technical leadership in the industry, and will be able to 'hit the ground running.' This sort of training results in desirable and influential graduates. **GISc:** At least three other institutions of higher education (U of M, St. Mary's, and St. Thomas) offer GISc training in the Metro, but all are much more expensive: Our degree could be offered for significantly less, while still drawing differential tuition thus markedly increasing revenue. The U of M and St. Mary's offer the MGIS (Master's in GIS) degree, we propose the PSM in GISc; a significant difference in both name and content. **ISRM:** The ISRM PSM is globally relevant to a digital world full of sensitive data at a time of unprecedented demand for education and skills in information security, privacy, and risk management. Having such a program here at MSU will allow us to serve the growing student interest in information security related careers, and also serve the needs of local and global corporations and governments in those areas.

5. Identify the "SMART" outcomes for the project (specific, measurable, achievable, relevant, and time-bound). (5 points)

Over the first three years, the measurable outcomes will include program approvals, applications for admission, enrollment persistence, and revenue generation. It will take longer to assess workplace outcomes; however, evidence indicates employment rates of PSM graduates exceed 81% and >51% of PSM graduates start at a salary exceeding \$50,000/year.

AMET: SMART outcomes will include student enrollment and retention, industry partnerships resulting in internship and job placement, launch of the program, and rates of return on investment. These outcomes are measurable and the launch of this program is timely due to the relevance in which AMET skills are still in, and expected to in high demand. **Biomed:** Industry partnerships will be expanded and strengthened. Student recruitments will increase. Graduates will have both scientific knowledge, and soft skills (business/management). Graduates will find successful employment. Industry will find successful employees. **BET:** At the completion of the BET program, graduates will be able to pass the Project Management Institute's Project Management Professional (PMP) exam. The test has become the standard of excellence in the project management field. Passing the test is a significant achievement and an excellent foundation for entry into industry. **ER:** There will be several outcomes, each of which fulfill the SMART criteria: a) An industry/governmental agency advisory board will be assembled, b) A curriculum will be designed and submitted for the ER PSM in conjunction with the advisory board, c) internships and other industry/governmental involvement with the PSM (e.g., practitioner lectures) will be secured, d) the ER PSM will be implemented and delivered for one year, followed by assessment. **GISc:** S: student enrollment will indicate success of the program. M: If we attract enough students to fill the computer lab we will have achieved success. A: The facilities (already exist) and human resources (adjunct instructors for the first few years) needed to implement this are highly achievable. This is not a "pie in the sky" dream of a program. The courses already exist, they simply need to be packaged and offered at 7700 France. R: Given the current labor market for Geospatial Tech skills and the ongoing demand for training in the field, this is indeed relevant. T: The time to strike is now, while Geospatial skills are in need. **ISRM:** SMART outcomes are as follows. *Specific:* launch the ISRM PSM program by end of FY2014. *Measurable:* program launched in time, students admitted to program, and initial round of courses developed and delivered. *Achievable:* both from a fiscal and capacity standpoint, the ISRM PSM is absolutely achievable with very little additional resources or risk for the institution. *Relevant:* the ISRM PSM is globally relevant to a digital world full of sensitive data at a time of unprecedented demand for education and skills in information security, privacy, and risk management. *Time-bound:* the ISRM PSM project launch will be completed by end FY2014, at which time the program is expected to be self-sustaining.

6. Discuss what this project will do for the university that warrants the investment. (5 points)

PSM programming will yield direct benefits in the form of revenue (differential tuition is possible), campus collaborations, expanded industry relationships, and alternative program offerings. Project collaborators understand MnSCU's role in growing our regional economy and providing affordable educational opportunities. By launching PSM programs, we move aggressively forward in becoming a partner of choice to meet our workforce needs and providing an affordable option to obtain an advanced degree.

AMET: This investment will strengthen and expand the MS MET program and presence in the Twin Cities. Revenue generation is anticipated. **Biomed:** Industry partnerships will be expanded and strengthened by these programs. Recruitment of graduate students will increase, improving our graduate programs. These programs will facilitate our ability to meet the workforce needs of Minnesota industries. They represent an adaptation and evolution of our current graduate programs, ensuring our success in

a changing world. **BET:** The BET program will offer a unique combination of technical skills and soft skills associated with the built environment. This will be a one of a kind program which will draw students and professionals from across the upper Midwest to MN State University, Mankato. **ER:** The ER PSM will, as noted, further the University's fulfillment of Challenge 10. It will become a focal point for industry support through contracts, donations, internships, and successful long-term employment (that increases the alumni base) that will expand well beyond the direct impact of the PSM program itself. **GISc:** This project will increase our visibility in the Metro as well as provide additional revenue. **ISRM:** The ISRM PSM will accomplish several key objectives for the university. First, it will be profitable, yet low risk. With an anticipated 25% tuition differential, the program builds on many existing courses (both in the CIS department and in other departments at MSU). The new courses will be taught by subject matter experts from industry hired as adjuncts. Should the program not be sustainable, the impact to the university will be minimal as there are no additional faculty lines, no expensive equipment or space accommodations. Second, the program will strengthen MSU's presence in a globally relevant arena: the security of electronic data and cyber-space. This is a global topic with no geographic limitations and ever-increasing visibility, both in the corporate board-rooms as well as within government.

7. Describe how the activities generated by this project would be sustained after one-time funding has ended, or if applicable, explain why the project does not need to be sustained. (5 points)

PSM sustainability is directly linked to program success (based on student enrollment). This project has been designed to effectively assess, design, and begin the implementation of the programs (if the environment is favorable). PSM programs, by their nature, are driven by the presence of paying students – thus, revenue generated could be reinvested into future PSM needs.

AMET: Once the program has been outlined, appropriate laboratory activities and procedures developed and a program schedule finalized there will not be a need for continued funding. **Biomed:** Most of the cost is in the investigative and design phases of program development. Programs should be self-sustaining, because many of the required courses are already in place, as is the infrastructure for this program. Additional tuition dollars should offset any unanticipated additional long term costs. **BET:** The cost of the program will, after the three year start-up period, be sustained by enrollment fees generated by the students. The majority of the courses will be taught by adjunct faculty. The equipment needs for the program will be minimal and marketing costs will be shared by the CM Department. The CM Advisory Board has been one of the strengths of the undergraduate program and will continue to provide quality input for the program. **ER:** The ER PSM is designed and intended to become self-funding with respect to covering ongoing staffing costs, which are not large. Industry support will be sought with regard to lectures provided by practitioners and grants that cover the costs of technology upgrades. **GISc:** This project should continue to generate regular tuition funds thus being self-sustaining in terms of personnel costs. Additionally, student tech fees fund computer lab upkeep, all that is needed is a modest one-time upgrade of pre-existing standard-grade computer labs to that of GISc labs. **ISRM:** The ISRM PSM is meant to be a self-sustaining program. It is built for maximum flexibility and least risk to the institution. It utilizes two existing 500-level courses from the IT program, online-ready "plus" courses from other MSU departments (COB & ENG), and proposes four new courses to be taught by subject matter experts from industry hired as adjuncts. With an anticipated 25% tuition differential, our courses would still be $\frac{1}{3}$ to $\frac{1}{4}$ cheaper than competing professional programs. Competitive pricing, along with near 0% unemployment in information security means a strong sustainable outlook for the ISRM PSM.

8. Budget (5 points):

The following budget table provides a summary of the overall request, including the sum of the totals for 6 PSM programs and shared funding needs. Below the "Overall Budget" table, we provide a breakdown of the "Shared Expenses" that would be utilized by all of the programs, and individual program budgets for AMET, Biomed, BET, ER, GISc, and ISRM.

The total cost of the project (all six programs combined) is estimated at \$615,130; however, the collaborators are pleased to provide \$23,747 in in-kind value and \$96,000 in cash match (for a total of \$119,747). Therefore, the total funding request from the Big Ideas program is **\$495,383**; however, a breakdown by PSM program, along with the shared expenses is provided below.

Overall Budget for Culturing Applied Problem Solvers Big Ideas Proposal (See below for individual PSM Program budgets, shared budget, and budget details)

| | FY12 | FY 12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|------------------------------------|-----------------|-----------------|------------------|-----------------|------------------|-----------------|
| Personnel | | | | | | |
| Unclassified Salary (in/over-load) | \$8,000 | \$39,820 | \$38,000 | \$7,692 | \$55,000 | \$7,692 |
| Adjunct/Fixed Term Salary | \$0 | \$0 | \$41,031 | \$6,789 | \$54,631 | \$13,132 |
| Fringe (all positions) | \$2,400 | \$13,615 | \$17,891 | \$3,519 | \$24,030 | \$4,088 |
| Graduate Assistant (GA) Stipends | \$0 | \$0 | \$27,300 | \$5,700 | \$27,300 | \$5,700 |
| GA Tuition Reduction/Waiver | \$0 | \$0 | \$21,716 | \$0 | \$21,716 | \$0 |
| Non-Salary | | | | | | |
| Marketing (Dvlpmt/Materials) | \$2,000 | \$1,000 | \$22,000 | \$1,000 | \$15,000 | \$1,000 |
| Supplies/Tel./Postage/Printing | \$500 | \$500 | \$1,500 | \$1,000 | \$1,000 | \$250 |
| Travel Expenses | \$3,000 | \$1,950 | \$8,784 | \$500 | \$8,784 | \$500 |
| Equipment and Software | \$0 | \$0 | \$85,800 | \$4,300 | \$8,000 | \$0 |
| Total Budget Requested | \$15,900 | \$56,885 | \$264,022 | \$30,500 | \$215,461 | \$32,362 |

The match details include:

- 1) FY12 Strategic Priority Funding from MSU, Mankato: \$35,000 (cash from FY12 RFP)
- 2) MnSCU PSM Initiative Funding (Biomed): \$11,000 (cash)
- 3) MnSCU PSM Initiative Funding (ISRM): (\$50,000 cash)
- 4) In-kind match includes departmental and individual contributions from in-load time/fringe dedicated to the project, supplies, communications, printing, and postage, as well as limited travel and Graduate Assistant funding – all in total valued at \$23,747.

Shared Expenses: The expenses in this table are those that would be shared by all six of the potential programs. We believe that the expenses shown here are needed to build the network of industrial contacts (for current and future PSM programs), develop a strong marketing plan, and continue to explore and develop future PSM programs at Minnesota State.

| Shared Expenses | FY12 | FY 12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|---|----------------|-----------------|-----------------|-------------|-----------------|------------|
| Unclassified Salary (in-load, overload) | | \$9,385 | \$38,000 | | \$39,500 | |
| Fringe (all positions) | | \$4,123 | \$11,400 | | \$11,850 | |
| Marketing (development and materials) | \$2,000 | | \$22,000 | | \$15,000 | |
| Supplies/Telephone/Postage/Printing | | \$250 | \$500 | | \$500 | |
| Travel Expenses | | \$250 | \$4,000 | | \$4,000 | |
| Total Budget Requested | \$2,000 | \$14,008 | \$75,900 | \$0 | \$70,850 | \$0 |

The shared expenses largely revolve around two basic needs that would support the development and launch of PSM programs at MSU, Mankato – a part-time PSM Program Coordinator and marketing funds. *Personnel:* The MnSCU feasibility study from 2011 indicated that one of the traits common among the successful PSM programs is the presence of a PSM Program Coordinator. This individual can help facilitate on-going communications with industry partners, the National Professional Science Masters Association (NPSMA), and internship contacts (a critical piece of the PSM program structure). The Coordinator would also be involved in student recruitment and development of marketing needs. All of these duties will involve the various PSM program leaders; however, experience has shown that having a dedicated person to help focus on some of these aspects of the PSM programs is very important. This position would be sustained beyond the Big Ideas funding through assistance from revenue generated by the PSM programs. *Non-salary:* The non-salary portion of the share expenses includes funding for the development of a marketing campaign, along with funds to produce marketing materials. \$3,600 is also included under marketing for FY13 to renew the University membership for two year to the NPSMA, as their endorsement and nation-wide exposure are important in the branding and publicity of these programs. The remaining non-salary expenses are included to support the Coordinator position, including office supplies, phone, printing, and travel expenses.

Individual Program Budget Summaries:

| AMET | FY12 | FY12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|---|-------------|-------------------|-----------------|--------------------|-----------------|-------------------|
| Unclassified Salary (in-load, overload) | | \$2,923 | | | | |
| Adjunct/Fixed Term Salary | | | \$7,431 | | \$7,431 | |
| Fringe (all positions) | | \$877 | \$568 | | \$568 | |
| Graduate Assistant Stipends | | | \$12,300 | \$5,700 | \$12,300 | \$5,700 |
| GA Tuition Reduction/Waiver | | | \$11,716 | | \$11,716 | |
| Supplies/Telephone/Postage/Printing | | | \$500 | \$500 | | |
| Travel Expenses | | | \$2,284 | | \$2,284 | |
| Equipment and Software | | | \$10,800 | \$4,300 | | |
| Total Budget Requested | \$0 | \$3,800 | \$45,599 | \$10,500 | \$34,299 | \$5,700 |

Personnel: The "Unclassified Salary" line item of \$8000 per semester would be to pay the salary for 1 adjunct position per semester for the first 2 years. This would be for either the teaching of graduate level courses within the program or to teach an undergraduate course to allow department faculty to teach additional graduate courses. The "Graduate Assistant Salary and Tuition Waiver" lines would be to hire 2 graduate assistants per year to assist in on-campus laboratories. Currently 70.6% of ALL AMET undergraduate and graduate level courses have a laboratory component. Only 1 of the courses has any faculty load assignment. The assistants will be used to support laboratory activities to allow faculty to develop and carry out offerings at 7700 France. *Non-salary:* The "Travel Expenses" will be used to cover costs associated with traveling to the cities to develop courses with our partners and to offer the courses at 7700 France. The "Equipment" line would be used for specific teaching materials and demonstration equipment that will be needed at 7700 France. The "Supplies and Materials" items are for necessary software licenses and tools required to offer courses at 7700 France. All "Match" are from AMET Department dollars"

| Biomed | FY12 | FY 12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|---|----------------|--------------------|----------------|--------------------|-----------------|-------------------|
| Unclassified Salary (in-load, overload) | | \$10,184 | | | \$15,500 | |
| Fringe (all positions) | | \$3,416 | | | \$4,650 | |
| Travel Expenses | \$1,000 | \$1,200 | \$1,000 | | \$1,000 | |
| Total Budget Requested | \$1,000 | \$14,800 | \$1,000 | \$0 | \$21,150 | \$0 |

Personnel: Launching a new educational program in collaboration with industry is a time intensive process. Given reduced faculty numbers and increased enrollments, faculty release time during teaching days is not in the best interest of our students. Biology faculty are highly trained in specialty areas, and are hired to fulfill specific needs. Adjunct faculty in the biomedical area are not available in the local community, thus replacing faculty release is difficult. Therefore, existing faculty will work in the summer and during an anticipated sabbatical to allow more focus on the program during periods free from other duties. *Personnel* funding will be utilized to compensate a program manager to develop industry connections, initiate internship opportunities, and recruit members of the Advisory Board. Other duties will include curriculum design, collaboration with the Department of Communication Studies and the College of Business to identify and develop professional skills courses, establishing a cross-disciplinary curriculum, curriculum approval, student recruitment, reviewing feedback from students and industry, and making adjustments as needed. Details: 25 duty days for program manager in FY12 (\$11,000), 34 extra duty days during sabbatical leave for program manager (\$15,500), 3-5 duty days each for a faculty member from the College of Business and one from the Department of Communication Studies to participate in curriculum design (\$3,500). *Non-salary:* Travel to Industry sites, reimbursement for partners, and meetings via WebX: \$3,000

| BET | FY12 | FY 12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|---|-----------------|--------------------|-----------------|--------------------|-----------------|-------------------|
| Unclassified Salary (in-load, overload) | \$8,000 | \$2,923 | | | | |
| Adjunct/Fixed Term Salary | | | \$30,000 | | \$30,000 | |
| Fringe (all positions) | \$2,400 | \$877 | \$5,648 | | \$5,648 | |
| Graduate Assistant Stipends | | | \$15,000 | | \$15,000 | |
| GA Tuition Reduction/Waiver | | | \$10,000 | | \$10,000 | |
| Supplies/Telephone/Postage/Printing | \$500 | | \$500 | | \$500 | |
| Travel Expenses | \$1,000 | | \$1,000 | | \$1,000 | |
| Total Budget Requested | \$11,900 | \$3,800 | \$62,148 | \$0 | \$62,148 | \$0 |

Personnel: Unclassified Salary will be for 0.5 FTE faculty, based on a fixed-term contract. This person will coordinate the development of marketing and web site materials, supervise the GA and teach one course in the program. Faculty will have a master’s degree and industry experience. Graduate Assistant will be a doctoral student, likely from another institution. Potential doctoral candidates could include Pre-doc fellows. GA salary and Tuition waivers are listed. GA will teach two courses in the program. *Non-salary:* Travel expenses will be mileage, hotels and meals within the region. Travel is expected to be minimal, but at times necessary to accommodate industry connections. Supplies include printing and miscellaneous materials needed for instruction.

| ER | FY12 | FY 12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|---|----------------|----------------|-----------------|-------------|-----------------|------------|
| Unclassified Salary (in-load, overload) | | \$2,923 | | | | |
| Adjunct/Fixed Term Salary | | | \$3,600 | | \$17,200 | |
| Fringe (all positions) | | \$877 | \$275 | | \$1,314 | |
| Travel Expenses | \$1,000 | | \$500 | | \$500 | |
| Equipment and Software | | | \$15,000 | | | |
| Total Budget Requested | \$1,000 | \$3,800 | \$19,375 | \$0 | \$19,014 | \$0 |

Personnel: The funding request for the Earth Sciences PSM would be used initially for adjunct salary to cover teaching and administration of an existing course to allow current faculty time to develop industry connections, build PSM curriculum, and launch a program. In addition, the funds would be used to cover the initial costs of hiring practitioners/adjuncts to teach required courses during the first year of the program, with the intention that it would be self-sustaining (based on enrollment demand) after that. *Non-salary:* Funds would be utilized to cover travel required to develop industry connections and establish internship opportunities. In addition, software would be needed to launch the program, including Vulcan Mine Geology and 3D graphics capacities.

| GISc | FY12 | FY 12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|---|------------|----------------|-----------------|-------------|----------------|------------|
| Unclassified Salary (in-load, overload) | | \$2,923 | | | | |
| Fringe (all positions) | | \$877 | | | | |
| Equipment and Software | | | \$60,000 | | \$8,000 | |
| Total Budget Requested | \$0 | \$3,800 | \$60,000 | \$0 | \$8,000 | \$0 |

Personnel: There is no request for funding to cover personnel associated with this PSM program. All hiring needs would be completed only if enrollment demand is sufficient – therefore, enrollment demand would also fund any needed positions. *Non-salary:* To fully launch this program at 7700 France, as intended, we will need to upgrade the existing computer lab(s) at that site to GISc standards (i.e., more powerful machines, faster uplink to the internet, commercial plotter in the lab and GPS equipment for student use, along with additional seats of specialized software). Estimated equipment needs and upgrades at 7700 France include computers (\$20,000), Ethernet uplink to Gigabit (\$5,000), high quality color printer (\$5,000), large format plotter (print maps) (\$12,000), hand-held GPS units for student use (\$10,000), and additional seat licenses of remote sensing software (\$8,000/year for two years).

| ISRM | FY12 | FY 12 Match | FY13 | FY 13 Match | FY14 | FY14 Match |
|---|------------|-----------------|------------|-----------------|------------|-----------------|
| Unclassified Salary (in-load, overload) | | \$8,559 | | \$7,692 | | \$7,692 |
| Adjunct/Fixed Term Salary | | | | \$6,789 | | \$13,132 |
| Fringe (all positions) | | \$2,568 | | \$3,519 | | \$4,088 |
| Marketing (development and materials) | | \$1,000 | | \$1,000 | | \$1,000 |
| Supplies/Telephone/Postage/Printing | | \$250 | | \$500 | | \$250 |
| Travel Expenses | | \$500 | | \$500 | | \$500 |
| Total Budget Requested | \$0 | \$12,877 | \$0 | \$20,000 | \$0 | \$26,662 |

Note regarding the ISRM PSM Program: Development of this PSM program has been fully funded by MnSCU; however, program launch is an important support mechanism to the overall project and therefore, we include it here as match. In addition, the MnSCU funds did not fully cover the PSM Coordinator and marketing needs identified in the shared expenses above. This program is part of the larger application and therefore details are provided below. *Personnel:* Faculty stipend to move two

existing courses to the online environment. Adjunct expenses to help develop curriculum and launch courses over the initial phases of the program, with the intent to be self-sustaining due to enrollment demand within the first two years. *Non-salary:* Expenditures will include travel to develop industry connections and establish internship programs, including an Industry Advisory Board. Also will help cover travel needs and communications necessary for recruitment efforts.

9. Identify any special considerations or needs required for this project (e.g. physical space, contractual obligations, IT support, or collaborations with/implications for other units). (5 points)

The collaborators met with Matt Clay from IT on January 5, 2012 and reviewed technological support that would be needed by the six programs. **Biomed**, **BET**, and **ER** did not identify any special considerations for space or IT needs beyond those within their current capacity. The **BET** program manager indicated that if Citrix was available, it would be beneficial. **AMET** intends to utilize space at the 7700 France site. To accommodate the launch of the program at 7700 France, faculty and students will need remote access to specific software packages currently housed within MSU, Mankato. Communications challenges may be present to have licenses being utilized in multiple locations at the same time. Some instructional design needs were also identified. **GISc** also intends to utilize facilities at 7700 France. To facilitate program launch at that site, investment would need to be made to upgrade networking and computer hardware in existing teaching computer labs in the Twin Cities. Existing MSU servers are adequate to support proposed expansion. A Gigabit uplink and access by Edina faculty and students to MSU, Mankato programs and databases would be critically important. Anticipated need for server connectivity of approximately 10 terabytes. Need to further assess the potential for Citrix connection. Lab space at 7700 France would need to include 20 work stations and room for plotters and printer support. Again, concern about communication at the same time with the licenses in multiple locations. **ISRM:** The **ISRM** PSM will be taught 100% online and no special needs are anticipated; however, we will need to engage extended learning and desire to develop asynchronous course design. Students will be expected to meet minimum computer hardware requirements in order to be able to visualize the course lectures (e.g., Adobe Connect) and run programs and tools in Virtual Machine environments. Instructional designers would be useful if available.

10. Provide a project timeline outlining key tasks, milestones and dates for completion. (5 points)

The basic project timelines for each program are going to look quite similar. Therefore, we provide the following overview of the anticipated timeline that can be applied to each program. The following milestones have been identified for the PSM Programs:

| | |
|-----------------------|--|
| Jan. - Feb. 2012 | Continue development of Industry Advisory Board (IAB) membership and initiate CDS proposal and curriculum development |
| March - June 2012 | IAB meetings to develop/review curriculum, create course learning outcomes for new courses & review/revise learning outcomes for existing courses, complete draft CDS proposal |
| July – Aug. 2012 | Finalize MSU & MnSCU paperwork for approval of new courses & new PSM degree program, develop marketing plan |
| Sep. 2012 | Submit for approval new courses & PSM degree through MSU & later MnSCU, launch marketing efforts |
| Sep. - Dec. 2012 | Supervise creation of course content (online-ready, 7700 France, on campus, etc...) as needed, work to finalize IT needs and prepare for launch |
| Dec. 2012 - Mar. 2013 | Supervise creation of course content, finalize approval processes, intensify marketing efforts |
| Mar. - Apr. 2013 | Internal & external (consultant) review of program and courses as needed/required |
| Mar. - May 2013 | Finalize marketing materials and begin enrollments for fall 2013. Include major announcements at professional meetings and within industry, such as at Secure360 (May 8-9) the leading information security conference in Minnesota. |
| May - Aug. 2013 | Final push for recruitment to ensure adequate enrollment (number of students & level of readiness of students), finalize hire of any adjuncts needed for instruction |
| Aug. 2013 | First PSM cohorts enrolled |
| Aug. 2013 – June 2014 | Review and evaluate programs and make adjustment as needed. |