

GIS Council

MINUTES

3/2/15 1:00 pm

AGSL

1. Call meeting to order and introductions: Eliza Bettinger, Donna Genzmer, Bill Huxhold, Brett Ketter, Ricky Kubicek, Greg Latsch, Julee Mitchell, Bob Schneider, Mark Schwartz, Nick Weber, Ken Woodall, Changshan Wu, Zengwang Xu
2. Approval of the Agenda: passed.
3. Approval of the GIS Council Minutes for 2/3/2015: approved with changes.
4. GIS Certificate Committee [Day/Hux]
 - 4.1. Announcements:
 - 4.1.1. Bill H. reported that Patti Day, GIS Certificate Coordinator, is on 100% leave for the remainder of the semester and possibly not back in Fall. Rachel Friedl, Geography office manager, will handle most of the paperwork.
 - 4.1.2. Graduating students should submit the online Verification Form. Bill H. will send another notice via email.
 - 4.2. Enrollment and Graduation: Update: tabled.
 - 4.3. Policies and Procedures: Update and discussion (attachment) Bill H. led the group through the document and changes were noted. Donna G. was instructed to make those changes and distribute it to the GIS Certificate Advisory Committee for vote at the next meeting.
 - 4.4. Program: Update and Discussion (attachment) [Hux]
 - 4.4.1. Impact of Graduate School Proposed Certificate Program changes (attachment) Bill H. led a discussion of the potential impact of the proposed changes. Bill H. will attend the next meeting of the Graduate Faculty Committee to voice our concerns.
 - 4.4.2. Presentation Rubric (attachments): Donna G. noted the GIS Certificate Assessment Plan (November 14, 2013) was approved previously. Donna G. collected 3 presentation rubrics to begin the discussion of a more customized rubric for our purpose. It was noted during discussion that the oral presentations are not a completion requirement but is solely a program assessment tool.
 - 4.4.3. Tier 3: vote: tabled.
 - 4.4.4. Application deadline: vote --tabled.
5. Student Topics/Concerns/ GIS Club & ASPRS Student Chapter: Update [Viel, Mitchell, Weber, Latsch]
 - 5.1. Geek Week: February 18-25 Donna G. reported that GIS participation in Geek Week is new this year. Donna G. and Jana Viel had a table at the Google Tech Talk and collected names of people interested in GIS. Donna G. also participated in the first UWM Campus IT Job Fair, both introducing the value of GIS as a complementary tool in the students' skills and collected names of interested students in the GIS minor, GIS Certificate, GIS Internships and GIS Club.

Julee M. reported on the GIS Club event held in the AGSL. The attendees were mainly club members.

Donna G. inquired about upcoming club events, such as a spring speaker. Spring plans are still coming together.
 - 5.2. UWM Hackathon March 28 pantherhacks.org: Donna G. reported the interest of the UWM Hackathon organizers in both students with GIS skills as well as problems to be solved.
 - 5.3. Esri UC Student Assistantships: Donna G. and Bill H. have circulated this opportunity to our students.
6. Future of GIS at UWM: discussion --tabled
7. GIS Council (2014-2015)
 - 7.1. Announcements
 - 7.1.1. GIS related presentations on campus:

Margaret Pettygrove (Feb 27 – rescheduled?)

Qihau Weng, Indiana State “Recent Developments in Remote Sensing over Urban Areas” March 27

Stephen Appel and Peter Armstrong April 3

Holzheimer: April 23 Steve Hornsby "Picturing the World: American Pictorial Maps, 1920-1970"

- 7.1.2. Census Bureau Workshops: March 10, March 12 Donna G. reported on the serendipitous opportunity to offer 2 Census Bureau workshops. The workshops will be advertised shortly.
- 7.1.3. Fundraising: Update –tabled.
- 7.1.4. EdTech Proposals are due March 6. [attachments] Donna G. shared 2 EdTech proposals which will be submitted under the sponsorship of the GIS Council. She requests letters of support, especially for the GPS proposal, to strengthen our case. The proposals will be submitted prior to the March 6 deadline.
- 7.2. Spring Speaker: Update –tabled.
- 7.3. WI Science Olympiad: April Donna G. relayed that the current plans for the WI Science Olympiad is unclear because Patti Day had been the lead on this and is now on leave for the remainder of the semester.
- 7.4. EsriUC: Donna G. reported that 5 students have indicated an interest in attending the EsriUC. Currently, no one else has indicated plans to attend. Our site license includes 3 complimentary registrations. Donna G. will email the students, encouraging them to apply for the EsriUC Student Assistantships. Donna G. will also search out any unused complimentary registrations from the rest of the UW-System to meet the demand. Julee Mitchell, John Schroeder, Michel Salach, Karra Barnes, Nelida Cortes
8. GIS Council 2015-2016
 - 8.1. GIS Day 2015 (November 18, 2015) [chair?]; tentative: WI DPI keynote --tabled
 - 8.2. GIS Student competition [chair?] --tabled
 - 8.3. UWM CUP grant with WI DPI: Donna G. attended a recent CUP grant overview and mentioned the possibility of the CUP grant to fund K12 teacher training in GIS. She has shared the materials from the meeting with those who attended a previous meeting with staff from WI DPI.
9. Other news/updates? (Research, datasets, new hires, etc.)
 - 9.1. Eliza B. will present a workshop through the Digital Humanities Lab on March 11, focusing on QGIS; Donna G. will advertise this via the email lists. Eliza explained that this workshop will be pretty basic, hands-on on laptops. Those present discussed the possibility of a more elaborate workshop later, perhaps with the GIS Club.
 - 9.2. Special introduction of Ricky K., GIS Certificatee and UWM Cultural Resource Management Services staff member. A discussion followed about the recent incorporation of Great Lakes Archeology into the Cultural Resource Management Services.
10. Recent/Upcoming GIS meetings, events, etc.
 - URISA
 - NACIS [Genzmer]
 - FOSS4G-NA
 - GITA WI
 - WIGICC WLIA Spring Regional; Fall Regional; Annual
 - EWUG
 - UCGIS (May DC)
 - AAG (Chicago)
 - ESRI UC (July, San Diego, CA)
 - ASPRS ()
 - WI Geospatial Summit (April 20, 2015; Madison) [Genzmer]
 - Other
11. Next meeting: Donna G. was directed to send out a doodle poll to schedule the next GIS Council meeting in about 4 weeks.
12. Meeting adjourned at 2:32 pm. Moved by Julee M. and seconded by Brett K.

Respectfully submitted,

Donna G. Genzmer

This document supersedes GFC Document 877, Revised and Approved September 20, 2010, through Appendix B.

POLICIES AND PROCEDURES FOR THE DEVELOPMENT, STRUCTURE, AND ADMINISTRATION OF GRADUATE CERTIFICATE PROGRAMS

Description

A certificate program is a sequence of courses that provides participants with specialized knowledge and skills for personal enrichment, professional advancement, or career change. Certificate programs may provide

- a basic introduction to an established field of study
- an interdisciplinary approach linking several fields
- a concentrated focus on a sub-field.

In most cases, certificates function independently of degree programs.

Curriculum

The curriculum should be organized into a structured progression or cohesive collection of courses. It is recommended that No more than 20% of the credits shall be in independent study or research. A minimum of 15 and a maximum of 21 credits are recommended. An integrating course or other capstone experience is recommended.

Administration

An advisory board is recommended for program administration and assessment. The majority of the administrative body must be faculty. The following types of decisions are restricted to faculty, and to academic staff holding probationary or indefinite appointments:

- student matriculation, continuation, and certificate completion verification
- certificate requirements, such as courses, internships, capstone experiences, minimum credits and grades

At a minimum, a program director or coordinator must be designated. The Graduate School recognizes this individual as the signature authority for admission and dismissal from the certificate program, approval of transfer credit, and verification of certificate completion. The certificate director must be a member of the graduate faculty.

For certificates sponsored by multiple schools/colleges, a lead school or college must be designated. The Graduate School recognizes this school or college as having the approval authority for the certificate program. It is expected that the lead school/college will consult with constituent units and any certificate advisory committee before submitting changes to a certificate.

Instructors

It is recommended that members of the graduate faculty teach all courses in a graduate certificate program.

Program Authorization

Requests for new graduate certificate programs must be forwarded to the Graduate School by the dean(s) of the sponsoring school(s) or college(s). These requests will follow the Format for a Graduate Certificate Program Proposal (see Appendix A) and must be authorized as indicated on the current Academic Approval Matrix.

Program Evaluation and Reauthorization

Certificate programs are approved for 5-year periods. During the fifth year, a review will be conducted. A decision regarding program reauthorization will be made by the GFC following the quinquennial evaluation. The process and self-study requirements for certificate reviews is specified in GFC document XXX (to be replaced with the assigned GFC document number for the certificate review process).

Students who are currently enrolled in a certificate program that is not reauthorized may complete the program, subject to course availability.

Admission

All students interested in obtaining a graduate certificate must formally apply through the Graduate School before completion of six credits in the certificate sequence, and pay any required application fees.

Applicants must possess a baccalaureate degree and have a minimum 2.75 cumulative undergraduate grade point average to be admitted into a certificate program.

Certificate programs may require additional information or have additional criteria for admission. Certificate programs will inform the Graduate School of their admission recommendation. The final admission decision is made by the Graduate School.

Pursuing two certificate programs at one time

A student may work toward a maximum of two UWM graduate certificates concurrently. This does not change the time limit for completion of each certificate.

Transfer Credit

No more than 20% of the required credits may be taken at an institution other than UWM. These courses are subject to Graduate School transfer policy and must be approved by the director of the certificate program.

Articulation between Graduate Certificate Programs

~~No courses or~~ A maximum of 6 credits may double count from one graduate certificate to another. ~~Minimum credit requirements for each certificate must be met without duplication of any courses.~~

Articulation between Certificate and Degree Programs

1. Credits and courses required for a certificate may double count toward meeting UWM graduate degree requirements subject to the following restrictions:
 - Credits taken in completion of certificate requirements may not contribute more than 90% of the total credits needed to obtain either a master's or doctoral degree at UWM.
 - Certificate courses used toward meeting degree requirements must be completed within the time limit for the degree
 - Degree programs must approve the courses from certificates that can double count toward the degree.
2. Courses completed for a degree may be counted toward a subsequent certificate, subject to all certificate policy requirements.

~~3. A course may count toward no more than one certificate and one degree.~~

~~4.3~~ Students may not earn a certificate ~~and subsequent to~~ a concentration in the same area.

Time Limit

Certificate program time limits shall be established as follows:

18 or fewer credits	3 years from initial enrollment in the certificate sequence
19 or more credits	4 years from initial enrollment in the certificate sequence.

For those certificates that require simultaneous degree enrollment and are awarded concurrent with the degree, the time limit shall be the same as that of the degree program. Students pursuing all other types of certificates must complete the certificate requirements within the time limits stated above even if they are simultaneously enrolled in a graduate degree program.

Certificate Completion

Students must submit an application for certificate completion to the Graduate School, and pay any required completion application fees.

For qualifying students, the certificate program director will verify for the Graduate School the course number and title, grade, and semester of enrollment for all courses that meet certificate program requirements. Certificate completion will be posted on a student's official transcript in line with UWM's official conferral dates, and an official paper certificate will be sent to the student from the Graduate School.

Criteria for Awarding a Certificate

Graduate certificates are awarded to students who:

- Meet the certificate requirements within the allotted time limit
- Have a minimum 3.00 overall grade point average (without rounding)
- Have a minimum 3.00 grade point average in certificate courses (without rounding)

Certificates Approved Before Semester I, 2002-03

Twelve-credit certificates that were approved by the GFC, the Graduate School, and the Provost prior to fall 2002 (implementation date of the original certificate policy – GFC document 877) will be allowed to remain at twelve credits.

RECOMMENDATIONS FOR ACTION

1. The rules of GFC Document 877 revised September 20, 2010 apply to certificates earned through spring 2015.
2. The rules in GFC Document CERTPOL apply to certificates in progress as of summer 2015.
3. As of summer 2015, any certificate courses not used toward meeting degree requirements prior to summer 2015 may be used toward a subsequent degree subject to the rules of GFC Document CERTPOL.
4. Recommendations 1-3 shall be enacted upon approval from Academic Affairs.

APPENDIX A

Format for a Graduate Certificate Program Proposal

I. PROGRAM IDENTIFICATION

- 1.1 Title of Proposed Graduate Certificate** State proposed name as it would appear on a UWM student transcript.
- 1.2 Department(s) or Functional Equivalent(s) Sponsoring the Certificate** List units that will have an active role in program administration beyond offering required or elective courses.
- 1.3 College(s), School(s) or Functional Equivalent(s) Sponsoring the Certificate** List schools and colleges with budgetary authority for certificate administration
 - 1.3.1 List lead School or College (if there are multiple sponsors at this level)
- 1.4 Timetable for Initiation**

II. RATIONALE

Discuss reason(s) for establishing a new graduate certificate program in this area of study.

III. INSTITUTIONAL CONTEXT

- 3.1 Relationship to Mission of Institution**
- 3.2 Relationship to/Impact on Other UWM Programs**

IV. NEED

Discuss potential demand for the program, target population, estimated enrollment, and comparable programs offered at other institutions.

V. PROGRAM DESCRIPTION AND EVALUATION

5.1 Description:

- 5.1.1 Provide a brief narrative description of the program.
- 5.1.2 Define the nature of the program:
For example, is it a disciplinary concentration where the goal is to achieve a measure of depth within a defined area? Is it multidisciplinary where the goal is

to broaden one's knowledge and/or perspective on a particular area of study? Is this a graduate/undergraduate certificate (i.e., one in which the courses are U/G and undergraduates and graduates both earn the certificate, but are differentiated by how they register for the courses)?

- 5.1.3 List learning objectives and competencies that will be attained through this certificate. If relevant, discuss professional or certification/licensing standards that are addressed in the proposed curriculum.
- 5.1.4 List the mode(s) of instruction (i.e. in-person, on-line, hybrid).
- 5.1.5 Discuss whether this certificate program prepares students for gainful employment in a recognized occupation. If it does and is eligible for Title IV financial aid, supply the following information:
 - Occupations the program prepares students to enter
 - Occupational profiles
 - Costs for books and supplies
- 5.2 Curriculum – Courses and Credits:** Indicate number of credits and the specific courses or choice of electives that make up the certificate program. Describe any capstone requirement.
- 5.3 Admission requirements and procedures:** Identify minimum grade point average (G.P.A.) from the undergraduate and/or post-baccalaureate degree, any specific background preparation, and any other requirements for admission.
- 5.4 Allowance for transfer credit (if any):** Transfer credit is subject to the rules stated above. If the program has a more restrictive policy for transfer credit, that should be stated here.
- 5.4 Completion requirements:** State minimum grades required in specific courses, if any, and cumulative G.P.A. required in certificate courses
- 5.5 Time limit:** Indicate length of time allowed to complete the requirements for the certificate.
- 5.6 Certificate conferral:** State whether certificate will be awarded upon completion of certificate requirements or concurrently with completion of a specific degree program.
- 5.7 Program Administration:** State the name and administrative title (e.g. Director, Coordinator) of the person who will serve as the Graduate School liaison for the certificate program (aka the Certificate Program Representative). Provide names and roles of others involved in program administration (e.g. curricular development and

review, student advising). Describe how program administrators or advisory bodies will be appointed.

5.8 Participating Faculty: Please provide a list of participating faculty.

VI. RESOURCES

Address issues of cost to the university and any special charges or fees.

VII. BULLETIN COPY

Submit copy for the *Graduate School Bulletin* following the template provided by the Graduate School.

Certificate Working Group 2013-15

Barbara Bales, GFC representative, Associate Professor, Department of Curriculum and Instruction

Sukanya Banerjee, GFC representative, Associate Professor, Department of English

Naira Campbell-Kyureghyan, GFC representative, Department of Industrial Engineering

Erin Fox, Director of Graduate Education, Graduate School

Jenna Jazna, Graduation Specialist, Graduate School

Jerry Kaster, GFC representative, Associate Professor, School of Freshwater Sciences

Kathleen Koch, Director of Strategic Initiatives in Research, Education, and Scholarship, Graduate School and Office of Research

Karen Morin, GFC representative, Professor, College of Nursing

Ethan Munson, Associate Professor, Department of Electrical Engineering and Computer Science

Amanda Seligman, GFC representative, Associate Professor, Department of History

Kristene Surerus, GFC Chair, Associate Professor, Department of Chemistry

Document Approval History

Subcommittee on Graduate Course and Curriculum

February 19, 2015

GIS certificate Assessment Plan DRAFT

November 14, 2013 (during GIS Certificate Committee meeting)

Mission statement:

The Graduate Certificate in Geographic Information Science is designed for those individuals seeking careers as GIS specialists, providing geographic data management, spatial analysis, and GIS system management support to professionals in a broad range of disciplines, such as criminal justice, health services, city and regional planning, civil and environmental engineering, transportation, and marketing. Certificate holders will seek employment in positions such as "GIS Specialist," "GIS Analyst," or "GIS Coordinator."

GIS Certificate Academic Competencies: These Student Learning Outcomes (SLOs), when met, produce students who are capable of obtaining employment in the GIS field.

1. Ability to work effectively in teams.
2. An understanding of professional and ethical responsibility.
3. Demonstrate critical thinking skills in solving geospatial problems.
4. Ability to devise database schema required for addressing geospatial problems.
5. Ability to develop customized user interfaces appropriate for geospatial investigations.
6. Ability to appropriately incorporate GPS, CAD, and historical paper-based record data into a GIS framework.
7. Ability to identify geospatial problems and the requisite method, or set of procedures needed to address the issue.
8. Ability to construct a clear, presentable cartographic product that addresses a geospatial issue.
9. Understand the software/hardware requirements for implementing a scalable GIS.

Non-Learning Outcomes

1. Students will display professional behavior in final presentations in all coursework and in all interactions with faculty/staff and students.

Measurement Tools and Findings

1. Students will be assessed on SLOs via presentation of final project(s) in the last certificate course taken with such a requirement, by the faculty of the course and any other faculty/staff of the GIS council that attend the presentation.
2. A scoring rubric will be developed to evaluate student work in this presentation.
3. Exit survey (questionnaire) information evaluates students' level of satisfaction with courses/program goals and objectives.

Targets

1. 70% of students will pass the final presentation evaluation.
2. Greater than 50% of students will give the program an overall rating of neutral or above to question 20 of the exit survey (How confident are you that you have obtained the necessary skills for a career in GIS?).

Your name (will be omitted when this is given to the presenter):

Presenter's name:

Mark your response for each of the questions.

	Positive	Neutral	Negative
The presentation was well organized			
The presentation was easy to follow and understand			
The presenter's attitude was professional			
The length of the presentation was appropriate			
Questions were addressed adequately			
The topic of the presentation was appropriate for the course			
The presentation was easy to understand			

What did you like the most about the presentation?

How could the presentation be improved?

Country study presentation: Peer review rubric

- PLEASE WRITE COMMENTS: a couple of sentences or bullet points.
- The ratings table (weak/OK/good/excellent) is **optional**.
 - You might use the questions in the table to guide your comments.

Comments/Questions:

What did you learn from it?

Topic:	Exc	Good	Okay	Weak
How clearly and concisely did the author(s) present the country study highlights?				
How creative and effective was the presentation?				
How well was the presentation organized ?				
How well did the author(s) connect data to course topics ?				
What did you think of the presentation overall ?				

Country study presentation: Peer review rubric

- PLEASE WRITE COMMENTS: a couple of sentences or bullet points.
- The ratings table (weak/OK/good/excellent) is **optional**.
 - You might use the questions in the table to guide your comments.

Comments/Questions:

What did you learn from it?

Topic:	Exc	Good	Okay	Weak
How clearly and concisely did the author(s) present the country study highlights?				
How creative and effective was the presentation?				
How well was the presentation organized ?				
How well did the author(s) connect data to course topics ?				
What did you think of the presentation overall ?				

Geography 600: Presentation assessment for _____
 December 12, 2013

Criteria	Score out of 50 points
<p>Content communicated</p> <ul style="list-style-type: none"> ➤ All segments of research project discussed: research questions, relevant literature, methods & data, findings, etc. ➤ Soundness of research design: <ul style="list-style-type: none"> ○ Do the research questions relate to previous research/lit reviewed? ○ Do the methods fit with the research questions? ○ Do the findings answer the research questions? ➤ Soundness of the research practice: was sufficient data gathered? ➤ Analysis: Are the findings considered in relation to the geographical and other literature, and the theoretical framework? ➤ Significance of questions and findings discussed (in intro and/or conclusion) ➤ Are the limits of the research (methods, etc.) discussed? ➤ GEOGRAPHIC nature of research made explicit through use of geographic concepts (place, space, scale, etc.), spatial analysis and/or GIS methodologies, etc. 	/20
<p>Organization and clarity</p> <ul style="list-style-type: none"> ➤ Logical sequence that audience could follow ➤ Clarity of transitions ➤ Clarity of main points ➤ Speaking in sentences 	/15
<p>Style and delivery</p> <ul style="list-style-type: none"> ➤ Pace ➤ Eye contact ➤ Clarity of speech 	/5
<p>Visuals and mechanics</p> <ul style="list-style-type: none"> ➤ Appropriate visual aids ➤ Well-designed visual aids ➤ Slide design ➤ Slide text (free of errors?) 	/10
<p>Overall assessment</p>	

Notes for the paper:

D R A F T 7/3/2014

COLLEGE OF LETTERS AND SCIENCE (L&S)
SCHOOL OF ARCHITECTURE AND URBAN PLANNING (SARUP)
Geographic Information Systems Program

Policies and Procedures

The Geographic Information Systems (GIS) Program (herein after called the Program) is administered by the faculties of the Departments of Geography and Urban Planning, an Advisory Committee (herein after called the Committee), and a Program Coordinator. The Program offers an interdepartmental graduate certificate. This document describes the policies and procedures of the Program.

I. Mission and Goals

A. Mission Statement

The Graduate Certificate in Geographic Information Systems is designed for those individuals seeking careers as GIS specialists who provide geographic data management, spatial analysis, and GIS system management support to professionals in a broad range of disciplines, such as criminal justice, health services, city and regional planning, civil and environmental engineering, transportation, and marketing. Certificate holders will seek employment in positions such as "GIS Specialist," "GIS Analyst," or "GIS Coordinator."

B. Goals

To carry out its mission, the Program has established the following goals:

1. Deliver a high quality certificate program in GIS;
2. Equip graduates of its program with insight into the many applications of GIS, with the skills to employ GIS in a wide range of situations and problems, and with analytical, critical thinking, and methodological skills that can be applied not only to issues and problems centered on GIS-related problems, but also to a range of problems faced by people and societies;
3. Support research into applied projects in GIS.
4. Maintain liaison with the GIS Council, an informal groups of faculty and staff members with educational and/or research interest in GIS.
5. Engage in outreach with appropriate communities and stakeholders to share knowledge and learning for community benefit.

II. Administrative Structure

A. Faculty and Staff

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1. **Faculty Membership:** The Program's Faculty is composed of those members of the Geography and Urban Planning Departments' faculties with an educational and/or research interest in GIS. The entire faculties of both departments have authority over the GIS Certificate. For purposes of administering the GIS Certificate, academic staff members with an educational and/or research interest in GIS may serve as members of the GIS Faculty. Appendix A is a list of all current GIS Faculty members.
2. **Duties:** The GIS Faculty has primary responsibility for the immediate governance of the Program, including development and oversight of the Program's academic, research, and outreach activities. The Faculty shall carry out the academic planning process on a regular basis, including, but not limited to, the preparation of the unit's academic program plans and program assessment. Admission to its academic program, program reviews, and student appeals will be the responsibility of the Faculty. The Faculty makes recommendations to the Deans of the College of Letters and Science and the School of Architecture and Urban Planning, subject to the approval of the faculties of the Departments of Geography and Urban Planning, concerning program, budget, and personnel issues related to the Program.
3. **Meetings:** The GIS Faculty will not meet on a regular schedule. The Advisory Committee will act on behalf of the GIS Faculty to carry out the duties of the Faculty unless a meeting of the full Faculty is requested by the Advisory Committee or Coordinator. Individual members of the GIS Faculty may request that the Coordinator convene a meeting of the full GIS Faculty. Minutes reflecting all formal actions taken at full Faculty meetings shall be recorded. A quorum shall be one-half of the Faculty members identified in Appendix A.

B. Program Coordinator

1. **Eligibility for Position of Coordinator**

Any member of the Program Faculty (including academic staff members) may serve as Program Coordinator. The Program Coordinator is the day-to-day administrator of the Program. An individual may succeed her/himself as Coordinator.

2. **Appointment of Coordinator**

The Coordinator is appointed by the Deans annually upon recommendation of the GIS Advisory Committee. This appointment will occur in conjunction with the appointment of department chairs and will follow the same process.

3. **Duties of Coordinator**

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The Coordinator is responsible for the day-to-day functions of the Program. The duties of the Coordinator include, but are not limited to, the following:

A. Administration:

- (1) serves as the official channel of communication with the President, Chancellor, deans, and other University officials or departments for all matters affecting the Program;
- (2) meets regularly with the appropriate L&S and/or SARUP Associate Dean(s) regarding the activities and needs of the Program;
- (3) calls meetings of the Program's Advisory Committee, prepares agendas, and transmits minutes of the meetings to appropriate individuals and offices;
- (4) confers with the chair of the Advisory Committee regarding Program matters;
- (5) has charge of all official correspondence of the Program;
- (6) has responsibility for all Program supplies and records;
- (7) supervises Program administrative support personnel, if any;
- (8) develops Program forms and procedures;
- (9) directs on-going Program initiatives;
- (10) drafts Program's annual report, in consultation with the Advisory Committee, for the L&S and SARUP Faculties and Deans;
- (11) oversees preparation of the Ten-Year Review Self-Study;
- (12) serves as liaison to the GIS Council;
- (13) reviews application materials of students applying to the program and recommends acceptance or denial to the graduate school;
- (14) coordinates students addition and deletion to and from program listservs;
- (15) conducts or coordinates exit survey of graduates after each semester in line with Financial Aid requirements;
- (16) reviews and signs appropriate Financial Aid documentation for students;
- (17) liaisons with the Graduate School on all matters concerning Program.

b. Publicity

- (1) represents or arranges for representation of the Program at university events;
- (2) has responsibility for all Program information in the graduate catalog and other university publications, including web content;
- (3) writes newsletter copy;
- (4) spearheads development of student relations;
- (5) coordinates fundraising and development;
- (6) coordinates outreach;
- (8) develops ways to increase visibility of the Program;
- (9) develops and maintains alumni relationships.

c. Curricular Development

- (1) coordinates curricular innovations in collaboration with the GIS Advisory Committee;
- (2) examines and suggests changes based upon course evaluations and other forms of curricular assessment;
- (3) conducts regular curricular reviews in collaboration with the GIS Advisory Committee;
- (4) submits course and academic program requests for action by appropriate committees and the Dean;
- (5) integrates Program course offerings with other programs.

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- d. Student Advising - (See Appendix B for additional information on student advising.)
 - (1) offers academic advising for students in the Program;
 - (2) offers career advising for students, and writes letters of recommendation;
 - (3) maintains liaison with the GIS Club.
- e. Graduate Programming
 - (1) coordinates certificate programming efforts;
 - (2) participates in Program events.

With the consent of the GIS Advisory Committee, responsibilities may be delegated to appropriate individuals.

C. GIS Advisory Committee

1. Membership: The committee consists of members as specified in the Bylaws of the GIS Advisory Committee (hereafter called Bylaws; see Appendix C), one of whom will be elected as the Advisory Committee Chair.
2. Duties of the Committee: The committee makes recommendations to the GIS Coordinator and Faculty on program, budget, personnel, organizational, and other matters related to the Program, as detailed in the Bylaws.
3. Meetings: The committee shall hold regular meetings as specified in the Bylaws.

III. Academic Program

A. Admission of Students to Certificate Program

Any student holding a baccalaureate degree with a GPA of 2.75 or higher is eligible for admission to the GIS Certificate Program. Students submit to the Graduate School an application for graduate non-degree status. Students may be enrolled concurrently in a graduate degree program. The School/College to which students are assigned is based on the unit in which the coordinator is housed. See Appendix B for additional details about the admission process.

B. Certificate Requirements

Certificate in Geographic Information Systems

Credits and Courses

A minimum of 6 courses and 18 credits are required to receive the certificate. A minimum of 6 credits each in Urban Planning and Geography courses is required.

Required Courses (12 cr)

Tier 1 (select one course)

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UrbPlan	791	Introduction to Urban Geographic Information Systems for Planning
Geog	525	Geographic Information Systems <u>Science</u>

Commented [MDS1]: I suggest that Geography change these three course names.

Tier 2 (select one course)

UrbPlan	792	Using Urban Geographic Information Systems (GIS) for Planning
Geog	625	Intermediate Geographic Information <u>Systems</u> <u>Science</u>

Tier 3 (select two courses)

UrbPlan	793	Applied Projects in Urban Geographic Information Systems
UrbPlan	794	Internet Geographic Information Systems
Geog	725	Advanced Geographic Information <u>Systems</u> <u>Science</u> : Geographic Modeling
Geog	734	GIS and Society
Geog	960	Seminar; Geographic Techniques
Anthro	562	Techniques and Problems in Archaeology

Elective Courses (6 cr)

UrbPlan	692	Special Topics in Urban Planning: "Transportation Planning and GIS"
UrbPlan	791	Introduction to Urban Geographic Information Systems for Planning (if not selected above)
UrbPlan	792	Using Urban Geographic Information Systems (GIS) for Planning (if not selected above)
UrbPlan	793	Applied Projects in Urban Geographic Information Systems (if not selected above)
UrbPlan	794	Internet Geographic Information Systems (if not selected above)
UrbPlan	991	Legislative/Administrative Agency Internship
UrbPlan	999	Independent Study
Anthro	380	Anthropological Applications of GIS
Anthro	562	Techniques and Problems in Archaeology (if not selected above)
Bus Adm	749	Data Management Systems
Geog	403	Remote Sensing: Environmental and Land Use Analysis
Geog	405	Cartography
Geog	515	Watershed Analysis and Modeling
Geog	525	Geographic Information <u>Systems</u> <u>Science</u> (if not selected above)
Geog	547	Spatial Analysis
Geog	625	Intermediate Geographic Information <u>Systems</u> <u>Science</u> (if not selected above)
Geog	698	GIS/Cartography Internship
Geog	699	Independent work

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Geog	703	Advanced Remote Sensing
Geog	725	Advanced Geographic Information SystemsScience : Geographic Modeling (if not selected above)
Geog	734	GIS and Society (if not selected above)
Geog	750	Remote Sensing and Urban Analysis
Geog	960	Seminar; Geographic Techniques (if not selected above)

Other courses as recommended by the GIS Advisory Committee and approved by the Faculties of the Departments of Geography and Urban Planning.

Tier 2 or 3 courses can count as electives if more than required minima are taken.

C. Certificate Assessment Plan

1. Goals

The following goals for the certificate have been established (11/14/13):

- a. Produce graduates who have an understanding of GIS theory and applications and are able to function as professionals in the field.
- b. Prepare students obtain employment in the GIS field or continue their education.

2. Student Learning Outcomes

In order to assess the degree to which the Program is achieving its goals, the following student learning outcomes have been established for the certificate. When students complete the certificate in GIS, they will:

- a. have the ability to work effectively in teams;
- b. demonstrate professional and ethical responsibility;
- c. demonstrate critical thinking skills in solving geospatial problems;
- d. have the ability to devise database schema required for addressing geospatial problems;
- e. have the ability to develop customized user interfaces appropriate for geospatial investigations
- f. have the ability to appropriately incorporate Global Positioning Systems, Computer Aided Design, and historical paper-based record data into a GIS framework;
- g. have the ability to identify geospatial problems and the requisite method, or set of procedures needed to address the issue;
- h. have the ability to construct a clear, presentable cartographic product that addresses a geospatial issue;
- i. demonstrate understanding of the software/hardware requirements for implementing a scalable GIS.

3. Program Assessment and Review

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The GIS Advisory Committee, on an annual basis, will conduct a review of the certificate learning outcomes and, each year, formally will assess the extent of its success in achieving at least one of those outcomes. The following assessment tools will be utilized:

- a. Course final projects;
- b. Exit survey;
- c. 70% of students will pass the final presentation evaluation by meeting the criterion for an 90% proficiency level on the scoring rubric;
- d. Greater than 75% of students will give the program an overall rating of neutral or above to question 20 of the exit survey (How confident are you that you have obtained the necessary skills for a career in GIS?).
- e. Students will display professional behavior in final presentations.

D. Awarding the Certificate

Upon completion of requirements, the student completes a verification form that is reviewed by the Coordinator and then forwarded to the Graduate School for final verification and posting on the student's transcript. A certificate will be mailed to the student by the L&S Office of Interdepartmental Studies as soon as completion is verified and all necessary signatures are obtained. (See Appendix B for additional details about the awarding process.)

IV. Program Research and Outreach

A. Research – The Advisory Committee will maintain a catalog of faculty members' research related to GIS.

B. Outreach

The GIS program maintains liaison with several related organizations, including:

1. UWM GIS Council
2. UWM Cartography & GIS Center
3. UWM AGS Library
4. UWM Office of Sustainability
5. UWM Center for Urban Transportation Studies
6. Non Profit Center of Milwaukee
7. UWM Center for Economic Development
8. UWM Historic Resources Management Services
9. UWM Center for Urban Initiatives and Research
10. Geospatial Information Technology Association (GITA)
11. Associate of American Geographers (AAG)
12. Urban and Regional Information Systems Association (URISA)
13. American Society for Photogrammetry and Remote Sensing (ASPRS)
14. Geographic Information Science Certification Institute (GISCI)

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15. University Consortium for Geographic Information Science (UCGIS)
16. Wisconsin Geographic Information Coordinating Council (WIGICC)
17. Wisconsin Land Information Association (WLIA)
18. Esri Wisconsin Users Group (EWUG)
19. American Geographical Society (AGS)
20. Map Society of Wisconsin
21. Wisconsin State Cartographer's Office
22. Wisconsin Bike Federation
23. Engineers without Borders

V. Amendment of Policies and Procedures

These Policies and Procedures may be amended by a majority vote of the active members of the GIS Advisory Committee, upon approval of the Geography and Urban Planning Departments' faculties and Deans.

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Appendix A

GIS Faculty

Woonsup Choi	Associate Professor	Geography
Patrice Day	Senior Lecturer	Geography
Nancy Frank	Associate Professor	Urban Planning
Glen Fredlund	Associate Professor	Geography
Rina Ghose	Professor	Geography
Lingqian (Ivy) Hu	Assistant Professor	Urban Planning
William Huxhold	Professor and Department Chair	Urban Planning
Kurt R. Meingast	Information Processing Consultant	Urban Planning
Robert Schneider	Assistant Professor	Urban Planning
Mark Schwartz	Distinguished Professor	Geography
Changshan Wu	Professor	Geography
Zengwang Xu	Assistant Professor	Geography

Appendix B

Geographic Information Systems Certificate
Student Admission and Advising Processes and Responsibilities

1. Students begin the process of entering the program in different ways.
 - a. First contact with certificate coordinator:
 - i. The GIS Certificate Coordinator refers the student to the Graduate School website (<http://www.graduateschool.uwm.edu/students/prospective/admission/non-degree/>) to complete the application for graduate non-degree status, emphasizing that the student should indicate interest in the GIS program on the application;
 - ii. When the Graduate School receives the application, it verifies that the student has a baccalaureate degree.
 - iii. The student's information is sent to the GIS Certificate Coordinator.
 - b. First contact is application to Graduate School in non-degree status, with an indication of interest in the GIS certificate:
 - i. The Graduate School verifies that the student has a baccalaureate degree;
 - ii. The student's information is sent to the GIS Certificate Coordinator.
 - c. A student already enrolled in a graduate program expresses an interest in completing the GIS certificate:
 - i. The student files an application as a non-degree candidate (<http://www.graduateschool.uwm.edu/students/prospective/admission/non-degree/>) and indicates an interest in the GIS;
 - ii. The Graduate School verifies that the student has a baccalaureate degree;
 - iii. The student's information is sent to the GIS Certificate Coordinator.
2. The GIS Certificate Coordinator ensures student has an overall GPA of 2.75 or higher.
 - a. The GIS Certificate Coordinator notifies the Graduate School that the student is/is not accepted to GIS.
 - b. For students who are accepted, the Graduate School changes/enters the student's career to GIS in PAWS.
 - c. L&S Interdepartmental Programs Staff enters the student's information into a GIS student database.
3. Student takes required courses with advising support from the GIS Certificate Coordinator.
4. The GIS Program Coordinator makes a note in the student's record of any substitutions or waivers approved by the GIS Advisory Committee. These actions eventually will be added to the student's verification form.
5. Student indicates requirements are/will be completed by telling the GIS Program Coordinator, L&S Interdepartmental Programs Staff, or the Graduate School. L&S Interdepartmental Programs Staff and/or the Graduate School notify the GIS Program Coordinator who tells the student to complete the online verification form (http://www4.uwm.edu/giscertificate/forms/gis_cert_verification.cfm) and to send it to the L&S Interdepartmental Programs Staff.

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6. The GIS Program Coordinator enters any waivers or substitutions in the comments portion of the form, verifies student's completion of requirements, and sends the verification form to the Graduate School.
7. The Graduate School verifies completion of requirements and posts the information on the student's transcript.
8. At the end of every semester an exit survey will be sent to all graduating students by the L & S Interdepartmental Program Staff who prepares reports and sends them to the GIS Certificate Program Coordinator.

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Appendix C

GIS Advisory Committee Bylaws

1. Membership. The GIS Advisory Committee shall consist of the following seven to eight members:
 - a. three members appointed by the Dean of the College of Letters and Science upon recommendation of the GIS Advisory Committee; at least two of these individuals must be members of the Department of Geography GIS Faculty;
 - b. three members appointed by the Dean of the School of Architecture and Urban Planning upon recommendation of the GIS Advisory Committee; at least two of these individuals must be members of the Department of Urban Planning GIS Faculty;
 - c. a student member appointed by the Committee, selected from the current GIS Certificate students in consultation with the Student Association;
 - d. the Certificate Coordinator as an *ex-officio* member. The Certificate Program Coordinator, if also designated as one of the three appointees by either Dean, shall be an *ex officio*, voting member of the committee.
2. Terms of Office

Council members shall serve staggered three-year renewable terms.
3. GIS Advisory Committee Chair. Each year the committee elects from its voting membership a chair who serves a one-year term in that position. An individual may serve successive terms as committee chair.
4. Meetings and Quorum.
 - a. The GIS Advisory Committee shall meet at least once each semester, with additional meetings as needed. The Committee will record minutes reflecting all formal actions taken at the meeting.
 - b. A quorum shall be one-half of the voting members of the GIS Advisory Committee.
5. Vacancies.
 - a. Vacancies in faculty Committee positions shall be filled by appointment of an eligible individual to serve the remainder of the term of the position vacated. The appointment authority is determined by identifying the appointing department of the vacated position. The appointment will be by the Dean of the impacted College, in consultation with the Coordinator of the GIS Program.
 - b. Vacancies in the student's position shall be filled by an appointee of the Dean of the College of Letters and Science, upon recommendation of the Coordinator of the GIS Certificate Program, and in consultation with the Student Association. The appointee shall serve the remainder of the one-year term.
 - c. If the position of chair becomes vacant, it shall be filled by election of a new chair for the remainder of the academic year.

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6. Subcommittees. The Committee may establish ad hoc or permanent subcommittees to consider special matters within the general functions of the committee. The membership and functions of the subcommittees are expressed in writing and approved by majority vote of the committee. Subcommittee voting members may include faculty, academic staff, and student members not already members of the GIS Advisory Committee, provided that at least one of the voting members of the subcommittee is concurrently a voting member of the full committee. Recommendations of a subcommittee must be approved by the full committee before being forwarded to the Program and Department Faculties and the Deans for further action.
7. Committee Functions - The Committee is responsible for general oversight of the GIS Certificate Program. In that context, it has the following functions:
 - a. examines on a regular basis the content and structure of the GIS Certificate academic program and reviews and makes recommendations concerning that content and structure;
 - b. on a regular basis, conducts a formal assessment of the Certificate program that includes a review of the program's mission and goals;
 - c. on an annual basis, reviews the list of courses approved for the certificate and determines if courses should be removed or added;
 - d. maintains liaison with faculty and staff members utilizing GIS at UWM and encourages their participation in the Program;
 - e. considers any matter within its general function on its own initiative or when referred to it by the Dean or the GIS Faculty;
 - f. reports annually to the faculties of the College of Letters and Science and the School of Architecture and Urban Planning.
8. Duties of the Committee Chair - The Committee Chair is responsible for convening, conducting, and adjourning the meetings of the GIS Advisory Committee and for the following:
 - a. confers with the Program Coordinator to determine the need for meeting of the Advisory Committee and to set the agenda for such meetings;
 - b. prepares formal transmittals of Committee actions to the appropriate authorities;
 - c. appoints subcommittees, if any;
 - d. assists the Program Coordinator in carrying out her/his responsibilities.
7. Amendment of Bylaws - The GIS Advisory Committee Bylaws can be amended by a majority vote of the active members of the GIS Faculty, with the approval of the faculties of the Departments of Geography and Urban Planning and their Deans.

*Approved: (date) by GIS Faculty
(date) by L&S Faculty
(date) by SARUP Faculty
(date) by _____, Dean, L&S
(date) by _____, Dean, SARUP*

UWM Educational Technology Projects – 2015-16: Form A - Project Request Form

Project Title: Support for ArcGIS Server Technology at UWM

Unit Making Proposal: Geographic Information System (GIS) Council
See list of members at <http://www4.uwm.edu/gis/people.cfm>

GIS Council, ArcGIS Server Subcommittee:

Okey Peter Akubeze, Africology
Eliza Bettinger, American Geographical Society Library
Donna Genzmer, Cartography & GIS Center (project manager)
Terry Johnson, Center for Urban Initiatives and Research
Jim Kavanagh, College of Letters and Science
Kate Madison, Center for Economic Development
Kurt Meingast, School of Architecture and Urban Planning
Brian Nicholls, Department of Anthropology
Andy Ritter, UWM Libraries
Mark Schwartz, Department of Geography
Paul Vepraskas, Department of Urban Planning

Contact Person: Donna Genzmer

Office: Cartography & GIS Center, BOL 420

Email: dgs@uwm.edu

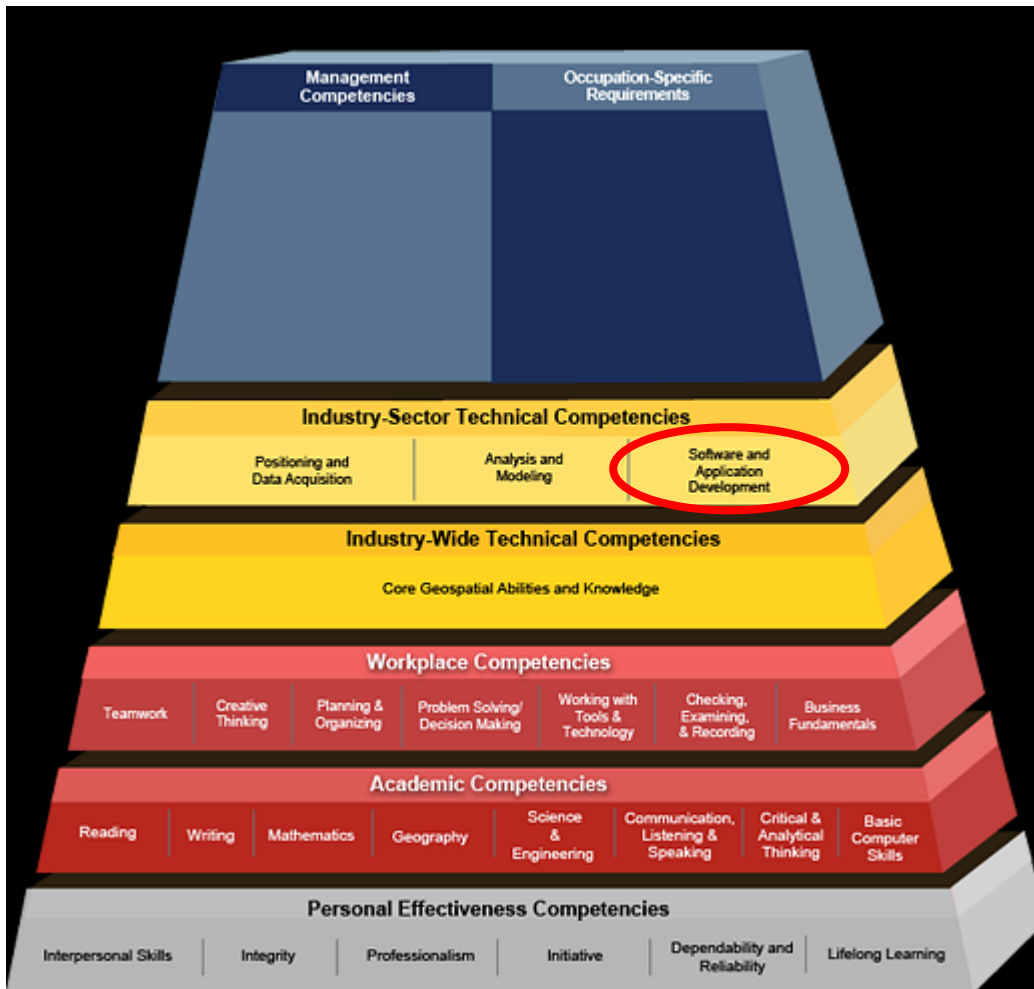
Phone: (414) 229-4865

I. Project Description – provide a clear and complete narrative that describes the type of project and how it will be implemented.

ArcGIS Server Technology allows users to develop web-based, interactive mapping applications from their desktop computers. For students, this technology provides invaluable experience developing skills in an emerging area of Geographical Information Systems (GIS). Many companies and governmental organizations are currently adapting their GIS capabilities to an Internet environment. Skills include website design, code writing and editing, project management, cartography, and data management and translation. This project will open up access to this technology for any student on campus interested in pursuing this skill.

A discussion of the Department of Labor's Employment and Training Administration's High Growth Job Training Initiative and workforce geospatial skill needs, including software and application development skills, can be found at https://www.e-education.psu.edu/files/sites/file/DiBiase_etal_2010_GTCM_URISA_Journal.pdf, see Table 14.

The Department of Labor's [Geospatial Competency Model](#) identifies "Software and Application Development" as an industry-sector technical competency, and can be seen in the diagram below.



An ArcGIS Server, a computer that manages the Internet connection and application functionality, is housed in a single location on campus, and can be linked to other computers using the campus-wide AD network. Individual users load specialized software on to their computer and can manage their web pages via an Internet or software interface. The ArcGIS Server is maintained by a specialist; users have no need to physically access the Server themselves.

Currently, only the School of Architecture and Urban Planning (SARUP) operates an ArcGIS Server. Most individual users or departments on campus would find the operation of an ArcGIS Server unmanageable and cost-prohibitive. As a result, the GIS Council has brought together several departments and centers on campus in an effort to develop a campus-wide initiative to jointly support and use a single ArcGIS Server for the campus.

As a pilot project, during academic year 2007-08, SARUP, the College of Letters and Science, UWM Libraries and the Center for Urban Initiatives and Research (CUIR) signed a one-year support agreement contributing \$1,000 to SARUP to host the ArcGIS Server for other units on campus. This temporary arrangement allowed users outside SARUP access to the Server. In its inaugural year, the ArcGIS Server hosted about twenty students, faculty and staff of the Departments of Anthropology and Geography, the Milwaukee Field Station, the Center for Economic Development and the WATER Institute, as well as UWM Libraries, CUIR and SARUP.

In the second phase, during academic years 2008-09 to present, the GIS Council was granted Educational Technology funds to continue the service agreement with SARUP, expand the program to provide additional technology and provide access to students from all departments and service centers

on campus. The program was successful in achieving these goals. The GIS Council expects the number of students using the ArcGIS Server to triple in the next year. The course where most of the students learn this technology, Urban Planning 794, was taught in both Fall and Spring semesters for the first time in 2013-14, which would be an indicator for increased usage.

This year, the GIS Council is requesting Educational Technology funds to continue the service agreement for another academic year. The funding would cover the operation and maintenance of the Server. WhatsUp server monitoring software/service will be implemented through UITS for the first time. Otherwise, upgrades to the software will not be required.

II. How will this project improve student access to technology? (Include specific arguments/evidence on need, urgency, and extent of impact on student body)

Without this program, students outside SARUP would not have access to an ArcGIS Server for Internet mapping applications. This program enables students from other departments to develop web-based projects for theses and independent study. Students would also be able to assist professors in research and work in various UWM service centers by providing valuable skills while learning the intricacies of an emerging technology. Students not only from SARUP (including Community Design Solutions, a research and community outreach group), but also students from the departments of Geography, Biological Sciences and Anthropology in the College of Letters and Science and students from the College of Health Sciences currently use the ArcGIS Server to deploy their web-based research projects.

III. Describe equipment items to be purchased and estimated costs. NA

IV. Describe remodeling and installation requirements: NA

V. Describe Personnel duties:

- The **Service Manager** is the professional responsible for managing service, primary escalation of problem resolution as well as technical project management and coordination.

Kurt Meingast, SARUP Technical Manager, would oversee the operation and maintenance of the ArcGIS Server. For academic year 2013-2014, the fee for his services – taken as S&E -- is \$2,000.00. In addition to maintaining the ArcGIS Server, Mr. Meingast also provides the invaluable services of online tutorials and documentation as well as one-on-one training and tutoring of the ArcGIS Server applications for UWM students, faculty and staff. Mr. Meingast also facilitates the implementation and deployment of the student research projects.

- The **Project Manager** is the GIS Council representative who will serve as the primary contact for coordinating services or addressing issues and concerns.
- Campus and Individual **User Group IT contacts**.

VI. Statement on how project meets needs of students with disabilities - include a written plan explaining how the technology will be made equally accessible to students with disabilities. For proposals for which this consideration may not be applicable, justify why the technology will not need to be made equally effective for students with disabilities.

The ArcGIS Server is available to all students, regardless of ability. The ArcGIS Server provides additional functionality by allowing access to all students, including those with disabilities, without having to be physically on campus. The web interface of ArcGIS Server gives students access to their projects from remote locations.

VII. Provide a brief timetable that outlines the milestones of the project including, where appropriate, the time frames for ordering hardware and software, installing hardware and software, and a starting date for the delivery of service to students.

Under the existing contract, which expires June 30, 2015, students can apply for access to the ArcGIS Server. The contract under EdTech funding would be in effect July 1, 2015, and allow continuation of the project for another year.

The availability of the technology will be advertised broadly. The GIS Council uses established and proven means of communication to disseminate information including news stories on the UWM GIS Council website, well-populated and diverse email lists, and LinkedIn and FaceBook status updates.

VIII. Maintenance/upgrades - include an estimate of the longevity of the project and its impact; identification of the unit assuming responsibility for maintaining oversight authority for the project; and the long-term financial implications and responsibility for the project's maintenance and upgrades.

Throughout academic year 2015-2016, the project will be overseen by a subcommittee of the GIS Council. SARUP will be responsible for operation and maintenance of the ArcGIS Server. In future years, it is hoped the server will be moved to a facility operated and maintained by UITS so that Server capacity can be expanded.

IX. Statement of how the project will be assessed:

The project will be assessed by the number and diversity of users and programs accessing the ArcGIS Server. Project expansion will occur as demand increases.

X. Expenditures:

	Educational Technology Funds Requested	Matching Funds (Identify source in narrative)
Equipment	\$	\$
S&E	\$ 2,000.00	\$
Remodeling	\$	\$
Personnel salary FTE = _____	\$	
Fringe benefits (41.4%)		
Total salaries and benefits	\$	\$
Total	\$ 2,000.00	\$

UWM Educational Technology Projects – 2015-16: Form A - Project Request Form

Project Title: GPS Units for Spatial Based Research and Instruction

Unit Making Proposal: Geographic Information System (GIS) Council (See list of members at <http://www4.uwm.edu/gis/resources/people.cfm>)

Contact Person:	Donna Genzmer	Eliza Bettinger
Office:	BOL 420	American Geographical Society Library
Email:	dgs@uwm.edu	bettinge@uwm.edu
Phone:	(414) 229-4865	(414) 229-6282

I. Project Description – provide a clear and complete narrative that describes the type of project and how it will be implemented.

The use of Global Positioning System equipment has become ubiquitous in many disciplines including anthropology, geography, biology, geology, public health, engineering and urban planning. Basic research of undergraduate and graduate students now often requires the utilization of geospatial data and significant experience in digital mapping using GPS hardware and software. Students without experience with this technology lack the basic ability to conduct important aspects of their research. In fact, any discipline that uses spatial data will find that their students will benefit from an understanding of this technology.

The GPS units will be available for short-term and long-term loans to students, faculty and staff, and overseen by a GIS Council representative.

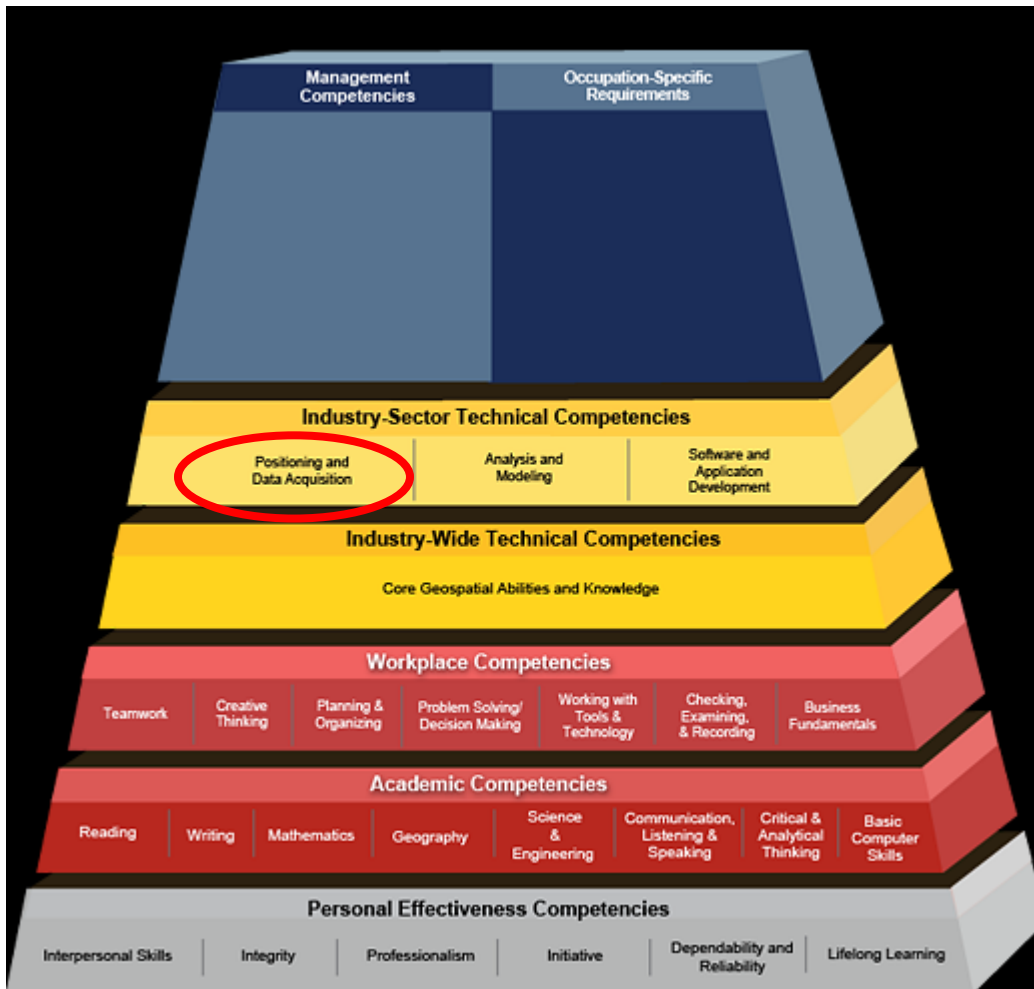
The availability of the equipment will be advertised broadly. The GIS Council uses established and proven means of communication to disseminate information including news stories on the UWM GIS Council website, well-populated and diverse email lists, and LinkedIn and FaceBook status updates.

II. How will this project improve student access to technology? (Include specific arguments/evidence on need, urgency, and extent of impact on student body)

Presently GPS units are available for use by the Anthropology Department and a single unit in the Geography Department on the UWM campus. The lack of units is increasingly impacting the type and level of geospatial analysis student, staff and faculty researchers can conduct.

A discussion of the Department of Labor's Employment and Training Administration's High Growth Job Training Initiative and workforce geospatial skill needs, including GPS data-capture skills, can be found at https://www.e-education.psu.edu/files/sites/file/DiBiase_etal_2010_GTCM_URISA_Journal.pdf

The Department of Labor's [Geospatial Competency Model](#) identifies "Positioning and Data Acquisition," which includes GPS data-capture, as an industry-sector technical competency, and can be seen in the diagram below.



III. Describe equipment items to be purchased and estimated costs.

Estimated Cost: \$31,920.00

- 20 Juniper Archer 2 Geo GPS Handheld units

<http://www.junipersys.com/Juniper-Systems-Rugged-Handheld-Computers/products/Archer-2/Specifications/Archer-2-Specifications>

- MS Office Mobile

- Accuracy: SBAS 2 meters; autonomous: 5 meters

IV. Describe remodeling and installation requirements:

Deployment of software included as part of the 20 unit Archer 2 Geo bundle package will involve coordination with campus, college and department IT personnel.

V. Describe Personnel duties:

- The **Project Manager** is the GIS Council representative who will serve as the primary contact for coordinating equipment use or addressing issues and concerns and conducting an assessment of this project.
- Campus and Individual User Group **IT contacts**.

VI. Statement on how project meets needs of students with disabilities - include a written plan explaining how the technology will be made equally accessible to students with disabilities. For proposals for which this consideration may not be applicable, justify why the technology will not need to be made equally effective for students with disabilities.

Archer XF101 GPS units will be available for short-term and long-term loans regardless of ability to facilitate student, staff and faculty research.

VII. Provide a brief timetable that outlines the milestones of the project including, where appropriate, the time frames for ordering hardware and software, installing hardware and software, and a starting date for the delivery of service to students.

The 20 GPS units will be available for use approximately 1 week upon receipt from vendor. Each Unit will be available as a Resource.

VIII. Maintenance/upgrades - include an estimate of the longevity of the project and its impact; identification of the unit assuming responsibility for maintaining oversight authority for the project; and the long-term financial implications and responsibility for the project's maintenance and upgrades.

- Longevity: ≥5 years, which is reasonable for this technology.
- Unit assuming responsibility for maintaining oversight authority: UWM GIS Council representative.
- Long-term financial implications and responsibility: Most of the needed software is available through an annual campus site license; additional updates of other software after the first year may be included in renewal requests.

IX. Statement of how the project will be assessed:

The project will be assessed based on the occurrence and diversity of the number of users and programs.

X. Expenditures:

	Educational Technology Funds Requested	Matching Funds (Identify source in narrative)
Equipment	\$33,420.00	\$
S&E	\$	\$
Remodeling	\$	\$
Personnel salary FTE = _____	\$	GIS Council representative time
Fringe benefits (41.4%)		
Total salaries and benefits	\$	\$
Total	\$33,420.00	\$

Attach an interim report (see [section 2.3.3 of the Administrative Policies and Procedures of the Advisory Committee on Educational Technology Fees](#)) if this is a request for continued support of a previously funded Educational Technology Fee project.