***STUDENT LEARNING ASSESSMENT PROGRAM***

***SUMMARY FORM AY 2018-2019***

**Degree and**

**Program Name:** Professional Science Master's in Geographic Information Science (PSM in GIScience)

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**PART ONE**

The PSM in GIScience program's objectives are listed in the table on the following page. Nine specific objectives are designated within three broader program goals. Each objective is assessed on the basis of the following assessment instruments:

**1. Internship Reports**

The internship is conducted in the second year of the degree and requires a proposal outlining the goals of the internship, registration (3-credits) and academic supervision. Currently the PSM Coordinator serves as default academic supervisor for all internships, but internships may be supervised by other EIU approved graduate faculty members with permission of the PSM Coordinator. Students are required to keep a journal and submit a written report documenting the objectives and accomplishments of their internship. Internship site coordinators agree to provide feedback by phone and/or e-mail during and immediately following the internship.

**2. Final GIS Project Reports**

Students are required to submit both a written report of a GIS research or professional project related to fulfill the Certificate of Comprehensive Knowledge requirement of the graduate school. This is typically conducted just prior to graduation, and is often the last requirement to be completed by a student. Projects may be performed as part of the internship or separately. Project reports are currently evaluated by a committee consisting of the PSM Coordinator and one other faculty member, and this evaluation occurs as soon as the written report is submitted.

**3. Final GIS Project Presentations**

Students are also required to do an oral presentation for their final research or professional project. Students are expected to clearly communicate the motivation and background of their project, the results and limitations/future work. Project presentations are currently evaluated by a committee consisting of the PSM Coordinator and one other faculty member, and this evaluation occurs as soon as the oral presentation is completed.

**4. Exit Interviews/Alumni Surveys**

We conducted an alumni survey in fall 2019. The survey was sent electronically to 20 alumni, and included 20 questions about their experience in the program, current employment, and relevance of the program to their career since graduation.

In the 2018-19 academic year we had one student graduate the PSM degree program.

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| What are the learning objectives? | How, where, and when are they assessed?\*  | What are the expectations? | What are the results? | Committee/ person responsible? How are results shared? |
| **GOAL: GIS/RS Technical Competence** |
| TC1. Manage (create, edit, convert, filter, document) raster and vector GIS data in various formats. | Final Project, Alumni Survey | Students will provide evidence of identifying and acquiring multiple data sources relevant to their project goals, perform appropriate editing, conversion and filtering tasks, and properly document their data and processing steps.  | Our graduating student’s final project involved synthesis of existing GIS data, field-collected data and georeferenced aerial photos and was well-documented. All 8 of 8 alumni responding to our alumni survey answered that the PSM program contributed “Very much” to their knowledge and understanding in GIScience theory and fundamentals, as well as their technical skills and/or competence in GIS applications and spatial analysis. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| TC2. Symbolize data & construct map products that effectively communicate information. | Final Project, Alumni Survey | Students will present thematic maps that effectively communicate the data and analysis results of their final project. Maps will be self-explanatory, with a clear message and intuitive symbolization that is appropriate to the data being presented. | Our graduating student’s final project included a number of well-designed maps that effectively communicated his research. All 8 of 8 alumni responding to our alumni survey answered that the PSM program contributed “Very much” to their knowledge and understanding in GIScience theory and fundamentals, as well as their technical skills and/or competence in GIS applications and spatial analysis. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| TC3. Design structures and procedures to support GIS data collection, management and analysis.  | Final Project, Alumni Survey | Students will demonstrate the ability to construct relational geodatabases, procedural geoprocessing models and/or python scripts to accomplish specific, documented GIS data compilation, processing or analysis tasks. | Our graduating student’s final project involved compilation of field data into a relational database and subsequent analysis using advanced statistical methods. All 8 of 8 alumni responding to our alumni survey answered that the PSM program contributed “Very much” to their knowledge and understanding in GIScience theory and fundamentals, as well as their technical skills and/or competence in GIS applications and spatial analysis. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| **GOAL: Spatial Analysis** |
| SA1. Derive higher level spatial information from raw survey, GPS, satellite and other sensor data sources | Final Project,Internship Report | Students will demonstrate the ability to identify and classify features from aerial photographs, satellite images, field surveys and other data collection methods. | Our graduating student’s final project involved estimation of invasive species cover from ground surveys, and classification of forest coverage from historical aerial photos. All 8 of 8 alumni responding to our alumni survey answered that the PSM program contributed “Very much” to their knowledge and understanding in GIScience theory and fundamentals, as well as their technical skills and/or competence in GIS applications and spatial analysis. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| SA2. Measure and describe various types of spatial pattern in geographic features | Final Project,Internship Report | Students will be able to identify and describe patterns of clustering, spatial correlation and co-location at different scales of analysis. | Our graduating student’s final project did not examine patterns of clustering, but this would not have been appropriate to the study. All 8 of 8 alumni responding to our alumni survey answered that the PSM program contributed “Very much” to their knowledge and understanding in GIScience theory and fundamentals, as well as their technical skills and/or competence in GIS applications and spatial analysis. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| SA3. Identify and assess causal relations between geographic phenomenon | Final Project,Internship Report | Students will be able to perform and interpret statistical tests of spatial pattern, such as geographically weighted regression, Ripley's K-function and co-location quotients. | Our graduating student’s final project did not perform tests of spatial pattern as this would not have been appropriate to the study. The study did involve the development of a spatial sampling scheme. All 8 of 8 alumni responding to our alumni survey answered that the PSM program contributed “Very much” to their knowledge and understanding in GIScience theory and fundamentals, as well as their technical skills and/or competence in GIS applications and spatial analysis. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| **GOAL: Professional Skills and Knowledge** |
| PSK1. Define spatial problems, research questions and professional project goals  | Final Project, Internship Report | Students will clearly define the scope and objectives of their internship experience, including spatial data and analysis requirements. | The scope and objectives of our graduating student’s final project was clearly defined. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| PSK2. Place GIS projects within organizational context and justify their effort & expense  | Internship Report, Alumni Survey | Students will be able to explain how their internship project benefits the organization and discuss limitations in terms of spatial data quality, time and available resources.  | The relevance of our graduating student’s final project to the BLM objectives was clearly explained.  | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |
| PSK3. Discuss emerging trends in GIS-related technology, regulations, standards and norms and their effects on society | Internship Report, Alumni Survey | Students will demonstrate an understanding of the roles of emerging web technologies, open source software and volunteered geographic information in today's GIS industry, and be able to discuss the need for spatial data infrastructure and controversies regarding spatial data privacy. | Our graduating student’s final project presentation showed that he had a firm grasp of the role and controversies surrounding the preservation and management of historic land parcels by the BLM. | Results were compiled by the PSM Director with final report/presentation assessments performed in consultation with Dr. Viertel. |

\* The timing of each assessment is described in the *Part 1* text preceding the table.

**PART TWO**

Describe your program’s assessment accomplishments since your last report was submitted. Discuss ways in which you have responded to the CASA Director’s comments on last year’s report or simply describe what assessment work was initiated, continued, or completed.

We have implemented two major efforts to follow up on our proposals and the CASA Director’s comments in the previous assessment. First, we taught a 1-credit seminar course for the first time in Fall 2018 introducing students to the history, theory and societal implications of GIScience, and to get them started thinking about their internship and final PSM project. The course went very well and built up good relations among students and faculty. Because the students enrolled in the course have not yet graduated, it is too early to determine the effectiveness of this course in terms of guiding students towards thinking about their final projects. However, several students participated in independent studies in Spring 2019 to work on projects that could be developed into their final project.

Second, we conducted an alumni survey in fall 2019. The survey was sent electronically to 20 alumni, and included 20 questions about their experience in the program, current employment, and relevance of the program to their career since graduation. Eight students responded for a response rate of 40%. We considered this to be extremely high and the responses were almost universally positive about the program. We hope this will form the seed for continuing to maintain relations and obtain feedback and support from alumni.

**PART THREE**

Summarize changes and improvements in **curriculum, instruction, and learning** that have resulted from the implementation of your assessment program. How have you used the data? What have you learned? In light of what you have learned through your assessment efforts this year and in past years, what are your plans for the future?

We will offer the introductory seminar course again this fall, and are currently working on a new course proposal and degree program revision proposal to make this into a mandatory course for the program. We are also working to develop several new courses for the program:

1. A new course on Spatial Analysis and Statistics was taught for the first time in Spring 2019.
2. A seminar course in LiDAR Technology and Applications will be taught for the first time in several years in Fall 2019.
3. A new course in Geospatial Intelligence will be taught for the first time in Spring 2020.

Each of the above is being/has been taught as a special topics course, but we are working towards proposing them as permanent courses in due time.