Institutional Effectiveness
2022-2023

Program: Professional Science PSM
College and Department: College of Interdisciplinary Studies, Professional Studies
Contact: Samantha Allen
Mission:

The mission of the Professional Science Master's in Environmental Informatics (PSM-EI) program is to prepare graduates with advanced expertise in geographic information systems (GIS), spatial analysis, remote sensing, policy analysis, and environmental management. By integrating technical coursework with business and statistics, the program equips students with interdisciplinary skills to address complex environmental challenges. The program fosters collaboration across academic disciplines and provides flexible learning formats to meet the needs of diverse students and working professionals.

Attach Curriculum Map (Educational Programs Only):
Attached Files: See Appendix 1

Learning Outcome 1.1

Define Outcome:
Students will have the ability to apply GIS and statistical tools to manage spatially distributed environmental data to aid in decision making.

Assessment Methods:
Internship report by student; internship supervision evaluation.

Internship Written Report by Student: During the internship, students will be working in an industry, utilizing knowledge and concepts learned from the curriculum to produce deliverables, which will be presented in writing and during an oral examination. The oral examination and 3 written reports will be evaluated by the graduate student's advisory committee to assess whether the student has mastered program and concentration learning outcomes.

Internship Supervisor Evaluation: Internship employers will provide a written evaluation of respective intern's performance in achieving designated deliverables.

Criteria for Success (Thresholds for Assessment Methods):
The PSM-EI program has set a goal for all students to collectively be a 4.0 out of 5 or above on their supervisor evaluations.

Any student that gets marked average or below will have individual review discussion with the faculty or graduate committee

Link to 'Tech Tomorrow' Strategic Plan:
1.A Experiential Learning,2.A Technology Infused Programs,2.B Research, Scholar, Intellect, and Creativity

Results and Analysis:
The industry supervisor evaluations generally indicated good student mastery of GIS and statistical tools. For example, one evaluation stated that the student "has a vision and a skillset to take our… data and identify trends that are not readily apparent."

Use of Results to Improve Outcomes:
One evaluation was not completed. The PSM-EI program would like to improve methods more minimizing the risk of not receiving all evaluations from students.

This year we received generally high marks on all evaluations received. As a department, we would like to aim to keep these high marks for our students.

Learning Outcome 1.2

Define Outcome:
Students will demonstrate the skills to understand, analyze, and interpret data independently.

Assessment Methods:
Internship report by student; internship supervision evaluation.

Internship Written Report by Student: During the internship, students will be working in an industry, utilizing knowledge and concepts learned from the curriculum to produce deliverables, which will be presented in writing and during an oral examination. The oral examination and 3 written reports will be evaluated by the graduate student's advisory committee to assess whether the student has mastered program and concentration learning outcomes.

Internship Supervisor Evaluation: Internship employers will provide a written evaluation of respective intern's performance in achieving designated deliverables.

Criteria for Success (Thresholds for Assessment Methods):
One question on the evaluation asked supervisors to rate their level of agreement on a series of statements regarding student performance for the following statement: "Demonstrate an ability to work independently."

Any student that gets marked average or below will have individual review discussion with the faculty or graduate committee.

Link to 'Tech Tomorrow' Strategic Plan:
1.A Experiential Learning,2.B Research, Scholar, Intellect, and Creativity

Results and Analysis:
Supervisor evaluations indicated that the students were able to work independently. One question on the evaluation asked supervisors to rate their level of agreement on a series of statements regarding student performance. For the following statement, "Demonstrate an ability to work independently," seven out of the seven supervisors evaluations received marked strongly agreed. In a similar fashion, six of the seven supervisors gave a 5 for "initiative, and one scored a 4. Comments received include "worked well independently", "high motivation", and "deliverable hit right on for expectations."

Table 1.1 Summary of industry supervisor evaluations for seven out of eight PSM-Environmental Informatics students who graduated during the 2022-2023 academic year. One student did not submit an evaluation form.

	Number of ratings per category (out of four students)					
Intern attribute	Excellent	Very good	Average	Below average	Very poor	N/A
Attitude	5	2	0	0	0	0
Initiative	6	1	0	0	0	0
Maturity and poise	2	5	0	0	0	0
Ability to learn	6	1	0	0	0	0
Quality of work	7	0	0	0	0	0
Quantity of work	6	1	0	0	0	0
Dependability	6	1	0	0	0	0
Relations with others	4	3	0	0	0	0
Judgment	5	2	0	0	0	0
Attendance	6			1		0
Punctuality	7			0		0
Overall performance	7	0	0	0	0	0

Use of Results to Improve Outcomes:

This year, our students received high marks on the internship evaluations. We would like to aim for a continuation of these standards for PSM-EI students.

Learning Outcome 2.1

Define Outcome:
Students will demonstrate the ability to integrate business management concepts with environmental information to manage environmental systems.

Assessment Methods:
Internship report by student; internship supervision evaluation.

Internship Written Report by Student: During the internship, students will be working in an industry, utilizing knowledge and concepts learned from the curriculum to produce deliverables, which will be presented in writing and during an oral examination. The oral examination and 3 written reports will be evaluated by the graduate student's advisory committee to assess whether the student has mastered program and concentration learning outcomes.

Internship Supervisor Evaluation: Internship employers will provide a written evaluation of respective intern's performance in achieving designated deliverables.

Criteria for Success (Thresholds for Assessment Methods):
The PSM-EI program has set a goal for all students to collectively be a 4.0 out of 5 or above on their supervisor evaluations.

Supervisor comments regarding the student's ability to integrate business and leadership related skills to their internship experience are reviewed by the student's advisor.

Link to 'Tech Tomorrow' Strategic Plan:
1.A Experiential Learning,2.B Research, Scholar, Intellect, and Creativity

Results and Analysis:
Supervisors commented on how the students used business-related skills to enhance their effectiveness. Students received generally positive evaluations this year, with such comments form supervisors such as being a "forward thinker" or as having "high motivation". The students' advisory committees oversaw the students inclusion of business components to the internship projects, which is a required component of the final report and capstone presentation to which all students must adhere.

Table 1.1 Summary of industry supervisor evaluations for seven out of eight PSM-Environmental Informatics students who graduated during the 2022-2023 academic year. One student did not submit an evaluation form.

	Number of ratings per category (out of seven students)					
Intern attribute	Excellent	Very good	Average	Below average	Very poor	N/A
Attitude	5	2	0	0	0	0
Initiative	6	1	0	0	0	0
Maturity and poise	2	5	0	0	0	0
Ability to learn	6	1	0	0	0	0
Quality of work	7	0	0	0	0	0
Quantity of work	6	1	0	0	0	0
Dependability	6	1	0	0	0	0
Relations with others	4	3	0	0	0	0
Judgment	5	2	0	0	0	0
Attendance	6			1		0
Punctuality	7			0		0
Overall performance	7	0	0	0	0	0

Use of Results to Improve Outcomes:

Students received generally positive evaluation forms, especially in relation to attitude, initiative, maturity and poise, and overall performance. The average of all evaluation ratings totaled a 4.8 out of 5.

Effort should be given to maintain this high quality of student internship experience.

Learning Outcome 2.2

Define Outcome:
Students will communicate effectively in oral and written formats.

Assessment Methods:
Internship report by student; internship supervision evaluation.

Internship Written Report by Student: During the internship, students will be working in an industry, utilizing knowledge and concepts learned from the curriculum to produce deliverables, which will be presented in writing and during an oral examination. The oral examination and 3 written reports will be evaluated by the graduate student's advisory committee to assess whether the student has mastered program and concentration learning outcomes.

Internship Supervisor Evaluation: Internship employers will provide a written evaluation of respective intern's performance in achieving designated deliverables.

Criteria for Success (Thresholds for Assessment Methods):
Two questions on the evaluation asked supervisors to rate their level of agreement on a series of statements regarding student performance for the following statements: "Deliver effective oral presentations" and "Produce effective written communications".

Any student that gets marked neutral or below will have individual review discussion with the faculty or graduate committee.

Link to 'Tech Tomorrow' Strategic Plan:
2.B Research, Scholar, Intellect, and Creativity

Results and Analysis:
The eight graduating students defended and presented their internship projects to their graduate advisory committees and other stakeholders, including internship supervisors and other personnel from the internship agencies. The students also completed written internship project reports. All students passed their internship "defenses" and their committees approved their project reports, generally indicating successful communication skills.

Seven of the eight supervisors submitted student evaluations. For written communications, all supervisors of the seven written evaluations strongly agreed; for oral presentations, five strongly agreed, and two agreed. Comments were given such as, "has excellent communication skills and is very comfortable presenting information to a wide variety of audiences to help citizens better understand the importance of preserving and protecting environmental resources."

Use of Results to Improve Outcomes:
Additional preparation and mentorship could be given to guide the students in oral presentation skills, to move from agree to strongly agree.

We would like to maintain a high level of effective communication for student internship experiences.

Summative Evaluation:
The program has experienced high evaluations for their student internship experience, with the average score for the 2022-2023 cohort being a 4.8 out of 5. Effort must be given to maintain a high student internship experience as the program grows.

Additional attention can be given to confirming that all students submit their internship evaluations in order to maintain a full view of all graduation student internship experiences.

List of Appendices:
Appendix 1: Curriculum Map

Appendix 1: Curriculum Map

Professional Science Master's, Environmental Informatics					
Course	Title	Learning Outcomes			
		1.1 Apply GIS and statistical tools to manage spatially distributed environmental data to aid in decision making	1.2 Understand, Analyze and interpret data independently	2.1 Integrate business management concepts with environmental information to manage environmental systems	2.2 Communicate effectively in oral and written formats
BMGT 6200	Organizational Leadership			**x**	**x**
ESS 6510	Programming GIS	**x**			
ESS 6520	Environmental Informatics Python Applications and Machine Learning	**x**	**x**		**x**
ESS 6910	Internship	**x**	**x**	**x**	**x**
EVSS 6010	Environmental Social Policy				**x**
GEOG 5410	Remote Sensing	**x**			
GEOG 5650	Environmental Applications of GIS	**x**			
MATH 6070	Applied Linear Statistical Methods I	**x**	**x**		
MATH 6470	Environmental Statistics	**x**	**x**		
MKT 6100	Strategic Marketing			**x**	**x**
Electives	(various course titles)	**x**	**x**	**x**	**x**