1.3 Recent Number of Graduates

A summary of the number of geomatics degrees (GIS option) awarded for the last 5 years is shown below.

Fall Terms	Year (2011-

Program Educational Objectives

Program educational objectives are statements that describe the expected accomplishments of graduates during the first few years after graduation. Usually 3-5

2.2 Survey Option Student Learning Opportunities

Geomatics student professional learning opportunities include:

1. Geomatics Student Club community service activities. Each year, students in the Geomatics Club are encouraged to take on survey/GIS related projects that benefit the community. These projects provide the students with exposure to real-world projects, negotiation and fulfillment of a specific scope of work, and the opportunity to work with other disciplines.
2. The National Society of Professional Surveyors (NSPS) (formerly the American Congress of Surveying and Mapping) national student surveying competition. Geomatics students organize each year and begin a fundraising drive to supplement funding provided by professional organizations.
3. Professional Land Surveyors of Oregon (PLSO) annual conference. Students volunteer as runners to assist with conference details, attend technical paper presentations, and staff the OREGON TECH Geomatics department booth.
4. GME 468 Geomatics Practicum. Students are responsible for completing a number of community service projects for city, county, state, and federal agencies.
5. Industry speakers are invited to make presentations at the PLSO Student Chapter meetings.
6. Students are encouraged to participate in international organizations such as the International Federation of Surveyors (FIG).
7. Oregon Tech annual workshop staffed by Bureau of Land Management (BLM) speakers.

3. Summary of Six-Year Assessment Cycle

Table 3.1 shown below depicts the six year PSLO/ISLO assessment cycle for the geomatics GIS option. Table 3.1 indicates the PSLO/ISLO and the academic year and the course where the learning outcome will be assessed.

PSLO	ISLO	AY 12/13	AY 13/14	AY 14/15	AY 15/16	AY 16/17	AY 17/18
(a) an ability to apply knowledge of mathematics, science, and applied sciences	6	GME452 GME444			GME452 GME454		
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	-	GME454 GME162			GME161 GME454		
(c) an ability to formulate or design a system, process or							

4. Summary of Current Academic Year Assessment Activities

Students are rated on the following:

Students were assessed on their ability to correctly answer questions with respect to each of the performance criteria. If the question was answered correctly, the student was given a score of "1" and if it was not answered correctly, it was given a score of zero. The class was expected to have 70% or more of the students answer the questions successfully in each category.

Assessment Results:

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Understand theoretical concepts	Homework Assignment	0 or 1	70%	75%
Perform computations	Homework Assignment	0 or 1	70%	88%
Correctly identify potential problems	Homework Assignment	0 or 1	70%	88%

Number of students assessed = 8

Table 4.2 – Student performance on PSLO (a) in GME 454/455 Winter Quarter, 2016

Actions to be taken

As the scores in all categories exceeded the departmentally established minimum of 70%, no actions will be taken for this PSLO at this time.

4.2.3 PSLO (b) – "An ability to design and conduct experiments, as well as analyze

Assessment Results:

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Correctly reduce given leve notes	Exam Question	0 or 1	70% of class scores 1	97%
Demonstrate that the provided observation meet the given accuracy requirements	Exam Question	0 or 1	70% of class scores 1	97%

Number of students assessed = 32

Table 4.3 – Student performance on PSLO (b) in GME 161 Fall Quarter, 2015

Actions to be taken

As the scores in all categories exceeded the departmentallyn09 (y)21.9 (n09 (y)2 [(Q)27E5 (tliy)2

Assessment results:

Students in GME 454/455 – GNSS Surveying Applications are expected to design a GNSS control network, determine its suitability for a given set of project standards, and produce finished results. The network design is competed in Part I of a lab exercise and Part II analyzes and publishes results from the field observations. This assessment was conducted on Part II of this lab exercise.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Import and process data	Lab Exercise	1 to 4 scale	70%	89%
Analyze data and assess suitability	Lab Exercise	1 to 4 scale	70%	89%
Produce final data	Lab Exercise	1 to 4 scale	70%	89%

Number of students assessed = 9

Table 4.4 – Student performance on PSLO (b) in GME 454, Winter 2016

Actions to be taken

As the scores in all categories exceeded the departmentally established minimum of 70%, no actions will be taken for this assessment.

4.2.5 PSLO (c) – "An ability to formulate or design a system, process or program to meet desired needs" assessed in GME 351 – Construction and Engineering Surveying during Spring Quarter 2016.

Performance Criteria: Students must demonstrate the following

1. Demonstrate the ability to collect topographic data and produce a topographic map for engineering design.
2. Demonstrate the ability to integrate a site plan with the topographic data and produce a site plan suitable for construction layout.
3. Demonstrate the ability to layout the site plan in the field

Students are rated on the following:

Students in GME 351 spend the quarter working on a lot in an industrial park subdivision that will be developed into a small medical building. The project includes collection of field data, integration of field measurements and an engineered site plan into a set of construction drawings, and field layout of the completed project. It is expected that 70% of the class will obtain a score of 70% or better on the final project.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Complete lab project with a score of 70% or better	Lab Exercise	0 or 1	70%	100%

Number of students assessed = 4

Table 4.5 – Student performance on PSLO (c) in GME 351, Spring 2015

Actions to be taken

As the scores in all categories exceeded the departmentally established minimum of 70%, no actions will be taken for this assessment.

4.2.6 PSLO (c) –"An ability to formulate or design a system, process or program to meet desired needs" assessed in GME 372 – Subdivision Planning and Platting during Spring Quarter 2016.

Performance Criteria:

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Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Complete lab project with a score of 70% or better	Lab Exercise	0 or 1	70%	100%

Number of students assessed = 7

Table 4.6 – Student performance on PSLO (c) in GME 351, spring 2015

Actions to be taken

As the scores in all categories exceeded the departmentally established minimum of 70%, no actions will be taken for this assessment.

4.2.7 -Industrial Advisory Committee (IAC) Meetings

During this assessment period Geomatics faculty met with the Industrial Advisory Committee (IAC) three times. The meetings took place on October 21, 2015, January 21, 2016, and May 5, 2016. The most critical item with regard to program improvement from the IAC was stepping up of recruiting efforts within the program

1. Recruiting efforts are a top priority with the IAC committee. They would like to see the following items accomplished of the next year:
    a. Improve the GME home page on the Oregon Tech website. The IAC committee believes that the current GME home page does not represent a good reflection on the program. They also feel that since the webpage is the front door for many individuals shopping for a school, it should be the best representation of the program put out to the public.
    b. The IAC committee would like to see a stronger effort to recruit in the Veteran population. Particularly, an emphasis on Oregon Tech's rating as a "Veteran Friendly School".
    c. The IAC committee would like to see the Geomatics Department begin developing online courses. In particular, start with courses that might draw interest from practicing technicians that might want to take courses as a review for the FS exam. In particular, the legal sequence courses should be the top priority for starting online course offerings.

4.2.8 – Senior Exit Survey

At the end of the GME 468 (Senior Practicum) course, students are given the opportunity to answer a short survey regarding their experience in the program. One of the questions asks the student to rate how well prepared they felt that they were for each of the program student learning outcomes (a-k). This provides an indirect assessment from the students on how well they feel they have been prepared for each of the objectives stated for the program. The survey is administered online to graduating seniors using the Qualtrics survey tool.

Performance Criteria: The student will feel that they are prepared or highly prepared in PSLO a-k recognized by the geomatics department.

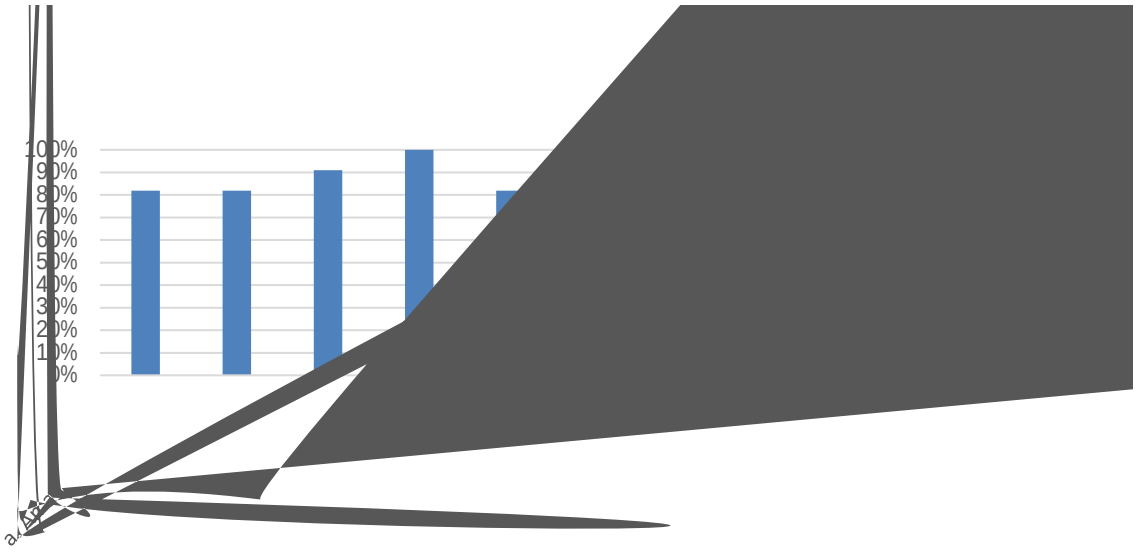

Figure 4.1 – Senior exit survey results for student individual feeling of preparation for each PSLO. Graphs represents results of spring 2016 survey.

Figure 4.2 – Senior exit survey results for student individual feeling of preparation for each PSLO. Graph represents results of spring 2015 survey. NOTE: each bar represents ak of the PSLOs. The xaxis labels were cut off in the Qualtrics report.

Assessment Resuls

Comparison of Figure 4.1 and Figure 4.2 shows that this year all categories (with one exception) scored 3.0 or higher. The program is still falling short of the stated goal with PSLO d (Ability to function on a multidisciplinary team). Review of the direct assessments in these categories from previous years shows that students are performing adequately in these areas, but the students are not making the connection between the PSLO and what they perceive their performance to be in that area.

Actions to be taken

Faculty will continue to try and tie PSLOs to class work to help students understand how what they learn in the classroom is related to the overall program objectives. The 2016 results will be compared to the 2017 results to see if there is a trend in improvement, or if the improvements seen in 2016 are a one-time result.

5. Evidence of Student Learning

5.1 Summary of Ded [(l)C(e)4 (d [(l)Cyf(e)4 (d)4 (e)]tC /T2TTc 0 Tw 13.957 0)4 (d)4 (e)]tC 2016d

5.2 Summary of Faculty Decisions on Program Improvements

The following is a summary of areas identified during this assessment cycle as areas than need additional monitoring or improvement:

1. Faculty need to continue to improve connecting classroom activities with the PSLOs. The 2016 senior exit survey indicates that students still feel that they are not adequately prepared for multi-disciplinary work. This will continue to be a challenge for geomatics instructors to include this in course work as the geomatics specific course work does not provide significant opportunities for inter-disciplinary work. The institution is making efforts to improve this as a part of the general education reform at the institution, but these changes are projected to be three to four years out. Faculty will seek to develop projects with civil engineering and environmental science in senior capstone in order to provide more major specific opportunities.

6. "Closing the Loop" – Changes Resulting from Assessment

The following is a summary of areas identified during the last assessment cycle as areas that need additional monitoring or improvement:

Senior Exit Survey - The 2015 senior exit survey showed an improvement in how students view themselves as being prepared for the (a) through (k) PSLOs as over the 2014 senior exit survey. The 2016 survey shows students felt "Prepared" in all areas with the exception of "an ability to function on interdisciplinary teams". For the 2016-2017 cycle, providing students more opportunity to work with other disciplines will be a department goal.

7. References

1. Oregon Institute of Technology. Institutional Research Home Page. June 9, 2011 <http://www.Oregon Tech.edu/ir>

8. Appendices - Appendix A – SLO Curriculum Map

Geomatics – Survey Option
Appendix A - PSLO Curriculum Map
2015/2016

PSLO (a) “Ability to apply knowledge of mathematics, science, and applied sciences”.

Shaded courses indicate that the PSLO is taught in the course and that students are evaluated on the outcome.

Freshman	Sophomore	Junior	Senior

PSLO (b) “An ability to design and conduct experiments, as well as to analyze and interpret data”.

Shaded courses indicate that the PSLO is taught in the course and that students are evaluated on the outcome.

	Freshman		Sophomore		Junior		Senior	
Fall	GIS 103		GIS 306		GIS 446		BUS 304	
	GME 161		GME 241		MIS 118		GME 425	
	MATH 111		MATH 252		SPE 321		GME 451	
	WRI 121		PHY 221		WRI 227		WRI 327	

PSLO (c) "An ability to design a system, process or program to meet desired needs"

Shaded courses indicate that the PSLO is taught in the course and that students are evaluated on the outcome.

Note: PSLO (c) was assessed in GME 3551 and GME 372 during the 2015/16 assessment cycle. During this academia (he)eet des.