GEOMATICS DEPARTMENT
SURVEY OPTION
Oregon Institute of Technology
NWCCU Assessment Report
Spring Quarter 2013 through Winter Quarter 2014

1. Program Introduction

1.1 Program History

Geomatics education has been offered virtually since the inception of the Oregon Institute of Technology, with an associate degree in Surveying initiated in 1951. The program was accredited by the Engineer's Council on Professional Development (ECPD) in 1953. ECPD is now recognized as ABET. A baccalaureate Surveying Technology degree was offered in 1966, and accredited by TAC-ABET in 1970. The program was one of the first two Bachelors of Science surveying programs in the nation to receive RAC-ABET accreditation in 1984. The geomatics program has enjoyed 57 years of continuous accreditation under ABET or its predecessor, ECPD. Oregon Tech can be proud of having the oldest BS Geomatics program in the nation. The program degree title was officially changed from Surveying to Geomatics in 2001, reflecting a global trend recognizing the broadening of the profession and the impact of a revolution in advanced technology. As of 2007 the department now offers the BS Surveying option (former BS Geomatics degree), and the BS GIS option on the Klamath Falls campus.

1.2 Enrollment Trends

Fall Terms	Year (2009-10)	Year (2010-11)	Year (2011-12)	Year (2012-13)	Year (2013-14)
Full-time Students	72	61	53	52	48

Reported values represent enrollment during the fourth week of fall quarter as recorded by Oregon Tech Institutional Research.

Table 1.1 – Geomatics enrollment trends

1.3 Recent Number of Graduates

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

Fall Terms	Year (2009-10)	Year (2010-11)	Year (2011-12)	Year (2012-13)	Year (2013-14)
First-time Students	10	17	16	10	10

Table 1.2 – Geomatics degrees awarded

1.4 Employment Rates and Salaries

Based on the results of the senior exit survey (June 2014), 7 students had found employment and 2 were still seeking employment. As of July 2014, 9 students had found employment in geomatics and 1 was still looking. The reported range of salaries was $35,000/year to $56,000/year.

2. Program summary

2.1 Geomatics Department Mission, Objectives, and Program Student Learning Outcomes (PSLOs)

On September 18, 2013 the Geomatics department faculty met and reviewed the department mission, program educational objectives (PEOs) and Program Learning Objectives (PSLOs) listed below. Faculty affirmed that the department mission, PEOs, and PSLOs still meet the goals of the program.

Department Mission

The mission of the Geomatics Department is to provide students with fundamental knowledge and skills in the geomatics and GIS disciplines. The Surveying Option prepares students to pass the Fundamentals of Surveying (FS) examination and pursue licensure as a registered Professional Land Surveyor (PLS). The GIS Option prepares students to become certified GIS Professionals. All students learn the professional responsibility of protecting the health, safety and welfare of the public, and become aware of global and cultural issues.

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 years. These objectives are consistent with the mission of the program and the institution**.**

Graduates of the Oregon Tech Geomatics Options will:

1. Acquire the ability to obtain professional licensure and/or certifications in the geospatial industry.
2. Advance in the geospatial industry during their career by becoming involved in local, state, national, or international professional organizations.
3. Obtain industry positions requiring increased responsibility.
4. Assume responsibility for lifelong learning in professional and personal development.
5. Demonstrate readiness for graduate education and/or advanced technical education.

Program Student Learning Outcomes (PSLO)

(a) An ability to apply knowledge of mathematics, science, and applied sciences
(b) An ability to design and conduct experiments, as well as to analyze and interpret data
(c) An ability to formulate or design a system, process or program to meet desired needs
(d) An ability to function on multi-disciplinary teams
(e) An ability to identify and solve applied science problems
(f) An understanding of professional and ethical responsibility
(g) An ability to communicate effectively
(h) The broad education necessary to understand the impact of solutions in a global and societal context
(i) A recognition of the need for, and an ability to engage in life-long learning
(j) A knowledge of contemporary issues
(k) An ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice.

Note: The expected learning outcomes for the survey option are based on ABET/ASAC accreditation guidelines.

2.2 Survey Option Student Learning Opportunities

Geomatics student professional learning opportunities include:

1. 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.
2. 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.

3. GME 468 Geomatics Practicum. Students are responsible for completing a number of community service projects for city, county, state, and federal agencies.
4. Industry speakers are invited to make presentations at the PLSO Student Chapter meetings.
5. Students are encouraged to participate in international organizations such as the International Federation of Surveyors (FIG).

3. Summary of Six-Year Assessment Cycle

Table 3.1 shown below depicts the six year PSLO/ISLO assessment cycle for the geomatics survey 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 GME444		
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	-	GME454 GME162			GME454 GME162		
(c) an ability to formulate or design a system, process or program to meet desired needs	4	GME351 GME454			GME351 GME454		
(d) an ability to function on multi-disciplinary teams	2		GME163 GME468			GME163 GME468	
(e) an ability to identify and solve applied science problems	-		GME351 GME452			GME351 GME452	
(f) an understanding of professional and ethical responsibility	3		GME161 GME466			GME241 GME466	
(g) an ability to communicate effectively	1		GME466 GME434			GME466 GME434	
(h) the broad education necessary to understand the impact of solutions in a global and societal context	8			GME434 GME241			GME434 GME241
(i) a recognition of the need for, and an ability to engage in life-long learning	5			GME161 GME468			GME161 GME468
(j) a knowledge of contemporary issues	-			GME351 GME454			GME351 GME454
(k) an ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice	7			GME162 GME454			GME162 GME454

Additional PSLO Assessments							
Review FS Exam Results		X	X	X	X	X	X
Review IAC comments		X	X	X	X	X	X
Alumni Survey			X			X	
Employer Survey				X			X

Table 3.1 – Six Year Assessment Cycle

4. Summary of Current Academic Year Assessment Activities

4.1 Matrix Summary of 2013/2014 PSLO/ISLOs.

Table 4.1 summarizes the PSLO/ISLOs that will be assessed during the 2013/2014 academic year. The matrix also indicates what course the outcome will be assessed in, the quarter of assessment, the instructor who will perform the assessment, and the method that will be utilized. Note that this table includes items from the 2012/2013 assessment cycle that were not assessed during that year.

PSLO	ISLO	Course	Faculty	Term	Method
(c) An ability to formulate or design a system, process or program to meet desired needs		GME163	Marker	Fall 2013	Rubric scored project
(d) An ability to function on multi-disciplinary teams		GME163 GME468	Marker Duryea	Fall 2013 Spring 2013	Team Evaluation
(e) An ability to identify and solve applied science problem		GME454 GME351	Marker Marker	Winter 2014 Spring 2013	Homework Exercise Exam Question
(f) An understanding of professional and ethical responsibility		GME161 GME466	Marker Duryea	Fall 2013 Winter 2014	Exam Question Homework Exercise
(g) An ability to communicate effectively		GME466 GME454	Duryea Marker	Winter 2014 Winter 2014	Homework Exercise Homework Exercise

Table 4.1 – PSLO/ISLOs to be evaluated during the 2013/2014 academic year

4.2 Summaries of individual assessment activities

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

NOTE: This is a re-assessment from the 2012/2013 assessment report where students were shown to perform below the departmentally established minimum.

Performance Criteria: The student will:

1. **Organize** the project so as to complete each phase correctly and accurately.
2. **Content** of project documents will demonstrate that student has collected all data, designed the system, and produced final documentation suitable for project requirements.
3. **Design Process followed** as directed.
4. **Drawings** are completed in an accurate and timely fashion and accurately depict the design.
5. **Delivery** of finished products is on time.

Students are rated on the following scores:

1. Poor work or no contribution at all
2. Significantly below average
3. Average work
4. Above average work

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Organization of project	Instructor scored rubric	1 to 4 scale	70%	88%
Content	Instructor scored rubric	1 to 4 scale	70%	88%
Design process followed	Instructor scored rubric	1 to 4 scale	70%	88%
Drawings	Instructor scored rubric	1 to 4 scale	70%	75%
Delivery	Instructor scored rubric	1 to 4 scale	70%	75%

Number of students assessed = 8

Table 4.1 – Student performance on PSLO (c) in GME 163 Fall Quarter, 2013

Assessment Results

All assessments were above the established minimum of 70%. As an overall group, this class met or exceeded all expectations. Students still seem to have more than expected difficulty with completion of professional drawings and with timely delivery of finished products.

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. However, faculty will continue to monitor the quality of finished drawings and the timeliness of delivery for finished products.

4.2.2 PSLO (d) – "An ability to function on a multi-disciplinary team"

Performance Criteria: Students must demonstrate the following items as a team:

1. **Quality of work** includes value and quality of contributions, suggestions, opinions, and ides to the group effort.
2. **Quantity of Participation** means sharing of responsibility, willingness to do his/her share of work, being prepared to work at scheduled times.
3. **Timeliness** includes attendance at classes, meetings, and work sessions. All group members meet deadlines and have work finished and ready on time.
4. **Level of work** includes professionalism of final work.
5. **Contribution** is the percent total of group members efforts towards the finished product (total must add to 100% for all group members).

Students are rated on the following scores:

1. Poor work or no contribution at all
2. Significantly below average
3. Slightly below average
4. Average work
5. Above average work

Departmentally Expected Score:

For PSLO (d), the geomatics department expects that 70% or more of students evaluated will score a 4 or a 5 in all catagories.

Assessment results for this cycle:

PSLO (d) – "An ability to function on a multi-disciplinary team" assessed in GME 163 – Route Surveying Fall Quarter 2013.

Students in GME 163 – Route Surveying are expected to work in teams to complete a quarter long route design project. The students are expected to collaborate in the collection of field data, design of a route alignment, and layout their design in the field. This requires the students to work together closely to accomplish scheduling, assigned tasks, and produce finished documents. As a part of the final project score, the student's ability to function together as a part of a team is evaluated by the instructor. The rubric below summarizes the instructor assessment of student team members. Table 4.2 below summarizes the results of this assessment.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Quality of work	Instructor scored rubric	1 to 5 scale	70%	89%
Quantity of participation	Instructor scored rubric	1 to 5 scale	70%	89%
Timeliness	Instructor scored rubric	1 to 5 scale	70%	89%
Level of work	Instructor scored rubric	1 to 5 scale	70%	89%
Contribution	Instructor scored rubric	1 to 5 scale	70%	89%

Number of students assessed = 9

Table 4.2 – Student performance on PSLO (d) in GME 163 Fall Quarter, 2013

Assessment Results

All assessments were above the established minimum of 70%. As an overall group, this class met or exceeded all expectations. The score of 89% for all five assessments was the result of one student who failed to meet an of the team work expectations. If this individual's scores are removed from the tally, all categories would score 100%.

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.

PSLO (d) – "An ability to function on a multi-disciplinary team" assessed in GME 454/455 – GNSS Surveying Applications Winter Quarter 2014.

Students in GME 454/455 – GNSS Surveying Applications are expected to work in teams to complete a series of field and office exercises requiring use of GNSS software and hardware. The students are expected to collaborate in the design of field surveys,

download and processing of data, and analysis of final results to insure project adherence to specified standards and specifications. This requires the students to work together closely to accomplish scheduling, assigned tasks, and produce finished documents. As a part of the lab class score, the student's ability to function together as a team is evaluated by the instructor.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Quality of work	Instructor scored rubric	1 to 5 scale	70%	88%
Quantity of participation	Instructor scored rubric	1 to 5 scale	70%	88%
Timeliness	Instructor scored rubric	1 to 5 scale	70%	88%
Level of work	Instructor scored rubric	1 to 5 scale	70%	75%
Contribution	Instructor scored rubric	1 to 5 scale	70%	88%

Number of students assessed = 8

Table 4.3 – Student performance on PSLO (d) in GME 454/455 Winter Quarter, 2014.

Assessment Results

All assessments were above the established minimum of 70%. As an overall group, this class met or exceeded all expectations. Only the area of "Level of Work" scored below the 88% mark. Two students in the class worked well with others and met the minimum group requirements, but put only minimal effort into the final product.

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.

4.2.3 PSLO (e) – "An ability to identify and solve applied science problems"

Performance Criteria: Students must demonstrate the ability to:

1. **Organize data** by bringing together field measurements, design information, and results from calculations to create information required to address the problem posed.
2. **Apply correct mathematical formula** to the data to obtain correct results.
3. **Apply checks** to insure the correctness of calculations. All computations that will be used for field work should have a check applied to them.
4. **Present results** in a format that is useable by others to address the problem presented.

Students are rated on the following scores:

1. No significant work done to resolve problem
2. Significantly below average
3. Slightly below average
4. Average work
5. Above average work

Departmentally Expected Score:

For PSLO (e), the geomatics department expects that 70% or more of students evaluated will score a 4 or a 5 in all categories.

PSLO (e) – "An ability to identify and solve applied science problems" assessed in GME 351 – Construction and Engineering Surveying Spring Quarter, 2013.

Students in GME 351 – Construction and Engineering Surveying are expected to be able to apply mathematical and surveying theory to solution of engineering problems. The final exam for the course requires the student to take design drawings and field data and make the computations required to lay out a section of storm line.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Organize data	Exam	1 to 5 scale	70%	86%
Apply correct formula or proinciple	Exam	1 to 5 scale	70%	86%
Apply Checks	Exam	1 to 5 scale	70%	86%
Present Results	Exam	1 to 5 scale	70%	76%

Number of students assessed = 7

Table 4.4 – Student performance on PSLO (e) in GME 351 Spring Quarter, 2013.

Assessment Results

All assessments were above the established minimum of 70%. As an overall group, this class met or exceeded all expectations. All areas scored at 86%.

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.

PSLO (e) – "An ability to identify and solve applied science problems" assessed in GME454/455 – GNSS Surveying Applications Winter Quarter, 2014.

Students in GME 454/455 – GNSS Surveying Applications are expected to be able to apply mathematical and scientific theory to solution of mapping and geodesy problems. Homework Exercise 2 in the class requires students to apply principles of math and geodesy to find differences between geodetic, grid, and ground distances and azimuths.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Organize data	Homework Problem	1 to 5 scale	70%	88%
Apply correct formula or proinciple	Homework Problem	1 to 5 scale	70%	88%
Apply Checks	Homework Problem	1 to 5 scale	70%	88%
Present Results	Homework Problem	1 to 5 scale	70%	88%

Number of students assessed = 8

Table 4.5 – Student performance on PSLO (e) in GME 454/455 Winter Quarter, 2014.

Assessment Results

All assessments were above the established minimum of 70%. As an overall group, this class met or exceeded all expectations. All areas scored at 88%.

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.

4.2.4 PSLO (f) – "Understanding of Professional and Ethical Responsibility"

PSLO (f) – "Understanding of Professional and Ethical Responsibility" was evaluated in GME 161 – Plane Surveying I Fall Quarter, 2014. Students were expected to be able to identify two sources for the professional code of conduct for their specific discipline.

Performance Criteria: The student will:

1. Be able to correctly identify two sources for a professional code of ethics targeted to their discipline.

Students are rated on the following scores:

1. Limited or no proficiency
2. Some proficiency
3. Proficiency
4. High proficiency

Departmentally Expected Score:

For PSLO (f), the geomatics department expects that 70% or more of students evaluated will score a 4 or a 5 in all categories.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Able to identify two sources for discipline appropriate code of ethics.	Exam Question	1 to 4 scale	70%	70%

Number of students assessed = 46

Table 4.6 – Student performance on PSLO (f) in GME 161 Fall Quarter, 2013

Assessment Results

The assessment shows that 70% of students in GME 161 were able to identify at least one source for the appropriate code of ethics for their profession. This score is lower than expected, but most likely due to the fact that professionalism and ethics was covered in week 1 of the quarter. Next year, more time will be spent reviewing this topic prior to the final exam.

Actions to be taken

As the score was at the established minimum, no re-assessment will be done until the next scheduled time. However, as mentioned above, additional time will be spent on this topic in the final exam review.

PSLO (f) – "Understanding of Professional and Ethical Responsibility" was evaluated in GME 466 – Boundary Law II Winter Quarter, 2014. Students were asked to read relevant sections of OAR 820, ORS 209, and ORS 672. After reading the applicable ORSs and OARs, students were given a short quiz covering the topics discussed.

Performance Criteria: The student will:

1. Be able to correctly apply OAR 820, ORS 209, and ORS 672 to simple problems concerning professional responsibility and ethics.

Students are rated on the following scores:

1. Students are expected to score 70% or better on an exam covering professionalism and ethics.

Departmentally Expected Score:

For PSLO (f), the geomatics department expects that 70% or more of students evaluated will score a 70% or better on the exam.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Able to score 70% or better on Professional Responsibilities and Ethics test	Exam	Percent of students with score above 70%	70%	90%

Number of students assessed = 10

Table 4.7 – Student performance on PSLO (f) in GME 466 Fall Quarter, 2014.

Assessment Results

The assessment shows that 90% of students in GME 466 were able to appropriately apply published standards for professional responsibility and ethics when given a quiz covering OAR 820, ORS 209, and ORS 672.

Actions to be taken

As the score was at the established minimum, no re-assessment will be done until the next scheduled time.

4.2.5 PSLO (g) – "An ability to communicate effectively"

PSLO (g) – "An ability to communicate effectively" was evaluated in GME 454/455 winter quarter of 2014. Students were asked to review current professional literature for the application of GNSS technology to a type of survey problem. Students were expected to find at least three articles relating GNSS technology to their problem of interest, provide a written summary of the articles, and give a brief 10 minute presentation to the class discussing the topic. Students were expected to use power point or some other type of visual aid and be prepared to address questions from the class.

Performance Criteria: Students must demonstrate the following:

1. **Topic Selection** must meet the criteria of the assignment
2. **Content** of the paper and presentation utilizes an appropriate number of credible and attributed sources.
3. **Organization** must follow a pattern that is easy to understand and conveys the main points of the presentation without confusion.

4. **Style** of delivery must convey understanding of the material, enthusiasm for the topic and meet the constraints for length and time.
5. **Delivery** of the paper and the presentation most follow established guidelines for presentation of technical materials.
6. **Visuals** must be appropriate to the paper and presentation and add to the material being presented.

Students are rated on the following scores:

1. Limited or no proficiency
2. Some proficiency
3. Proficiency
4. High proficiency

Departmentally Expected Score:

For PSLO (g), the geomatics department expects that 70% or more of students evaluated will score a 4 or 5 in every category.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Topic Selection	Instructor scored rubric	1 to 5 scale	70%	100%
Content	Instructor scored rubric	1 to 5 scale	70%	100%
Organization	Instructor scored rubric	1 to 5 scale	70%	88%
Style	Instructor scored rubric	1 to 5 scale	70%	100%
Delivery	Instructor scored rubric	1 to 5 scale	70%	100%
Visuals	Instructor scored rubric	1 to 5 scale	70%	100%

Number of students assessed = 8

Table 4.8 – Student performance on PSLO (g) in GME 454/455 Winter Quarter, 2014.

Assessment Results

The assessment shows that all of the students in GME 454/455 were able to effectively research a topic, develop a presentation, and deliver the presentation to their peers.

Actions to be taken

As the scores are above the established minimum, no re-assessment will be done until the next scheduled time.

PSLO (g) – "An ability to communicate effectively" was evaluated in GME 466 winter quarter of 2014. Students were given an address and/or assessor parcel number for a parcel of land in Klamath County. The student was then expected to research the boundary and property information for the parcel (recorded surveys, deeds, zoning, etc.) and then provide a written recommendation to a hypothetical client regarding potential development options for the property. Students are expected to provide a detailed and well organized report that includes all of the documentation discovered in their research.

Performance Criteria: Students must demonstrate the following:

1. **Sufficient research** to identify all of the potential problems with development of the assigned parcel.
2. **Organization** must follow a pattern that is easy to understand and conveys the information discovered in research clearly and effectively to the reader.
3. **Style** of writing must follow accepted conventions for technical writing.
4. **Documentation** must be present for all phase of research. The paper must not contain any assumptions. All recommendations must be supported be included documentation.

Students are rated on the following scores:

1. Limited or no proficiency
2. Some proficiency
3. Proficiency
4. High proficiency

Departmentally Expected Score:

For PSLO (g), the geomatics department expects that 70% or more of students evaluated will score a 4 or 5 in every category.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Sufficient Research	Instructor scored rubric	1 to 5 scale	70%	80%
Organization	Instructor scored rubric	1 to 5 scale	70%	80%
Style	Instructor scored rubric	1 to 5 scale	70%	80%
Documentation	Instructor scored rubric	1 to 5 scale	70%	90%

Number of students assessed = 10

Table 4.9 – Student performance on PSLO (g) in GME 466 Winter Quarter, 2014.

Assessment Results

The assessment shows that over 70% of the students were able to effectively conduct the research required to make recommendations to a client regarding the development potential of their property.

Actions to be taken

As the score was at the established minimum, no re-assessment will be done until the next scheduled time.

4.2.6 - Industrial Advisory Committee (IAC) Meetings

Geomatics faculty met with the Industrial Advisory Committee (IAC) three times during this assessment period. The meetings took place on May 13, 2013, September 27, 2013, and January 23, 2014. The following items critical to program development were discussed at these meetings:

1. Online course offerings in Geomatics – IAC and department faculty have discussed offering course work in both the survey option and the GIS option as online courses. Professor Duryea, who has led the effort in online course development, has recommended that the following courses be offered: GME 162, GME 175, GME 241, GME 242, GME 466, GIS 306, GIS 316, and GIS 426. These courses can be easily modified for online delivery and provide students with the bulk of the first two years of geomatics courses offered in the program. Professor Duryea and Professor Ritter have already developed GME 241, GME 162, and GIS 306 for online delivery. Those courses will be delivered for the first time Fall of 2013. The IAC members approved of this action believing that more

online course offerings will attract both new students and practicing professionals to the program.

2. Recruiting and retention – IAC members expressed concern at the Fall 2013 meeting concerning student enrollment for the geomatics program (both options). Recruitment and retention were discussed at all three meetings. IAC members are interested in seeing additional recruiting and will assist the department with this effort. Items to be implemented per IAC recommendations:
    a. Increase presence on social media (Website, Facebook, Twitter, Youtube, etc.). Members believe that the department's current presence is not strong and needs to be improved. The following suggestions were made:
        i. Update the website to insure that it is current with what is going on in the department.
        ii. Make more regular use of the departments existing Facebook page.
        iii. Explore utilizing other social media such as YouTube.
    b. More active recruiting among veterans
        i. Oregon Tech was voted as one of the most "Veteran Friendly" campuses, we need to utilize the distinction to attract more veterans to program.
        ii. Need to get program information out to counselors in Department of Defense exit programs and the Veterans Administration.
        iii. Establish a presence at recruiting fairs designed for Veterans leaving the service.
    c. Continue with efforts to establish articulation agreements with community college programs that have geomatics programs or allied fields.
    d. Increase recruiting efforts in local high schools. IAC members have agreed to help with this effort and encourage other professionals to do so as well.

IAC members also reviewed the curriculum and program content during these meetings. They made no recommendations for changes at this time other than the specific items listed above.

4.2.7 – 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.

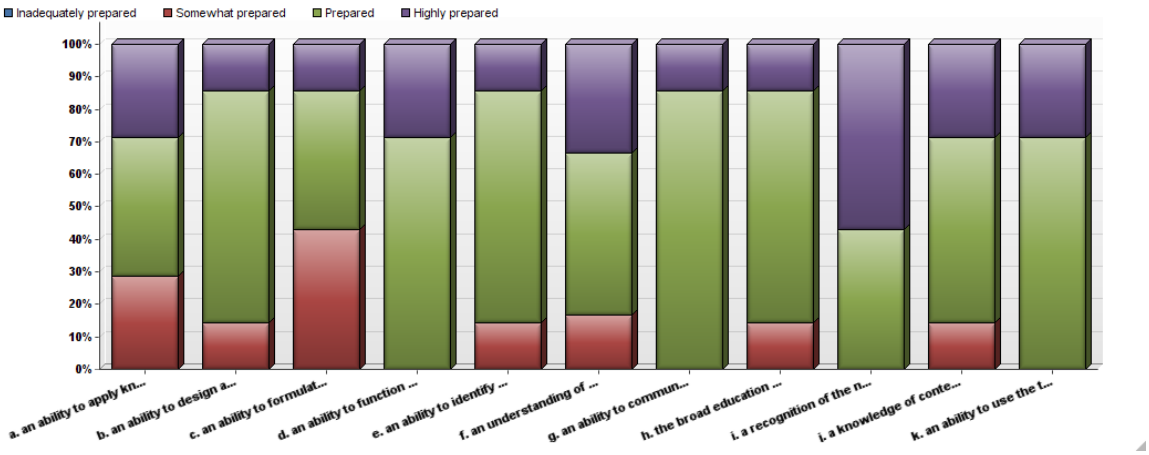

Figure 4.1 – Senior exit survey results for student individual feeling of preparation for each PSLO for academic year 2013/2014.

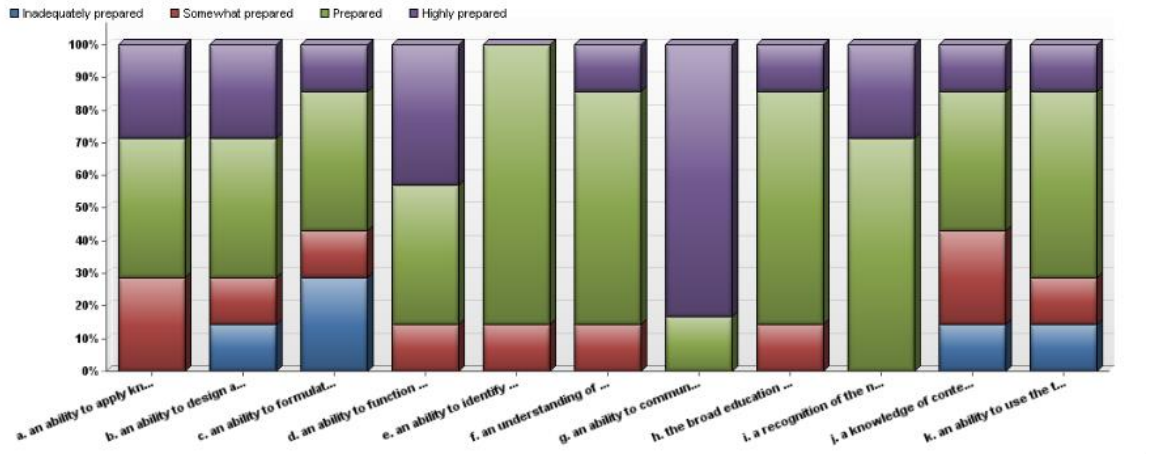

Figure 4.2 – Senior exit survey results for student individual feeling of preparation for each PSLO for academic year 2012/2013.

Assessment Results

Comparison of Table 4.1 and Table 4.2 shows that this year, there has been an increase in the graduating classes feeling of preparedness relating to the PSLOs for the program. The program is falling short of the stated goal with PSLOs b, c, j, and k. 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 discussion of these results has focused on better educating our students on the PSLO, how they relate to their classroom work, and how they are applicable to their career after graduation. GME faculty feel that students are not making a full connection with course work in individual classes and the overall goals of faculty for their education. This will require additional effort by faculty during the 2014/2015 academic year to tie the PSLOs to classroom activities so that students better understand the relationship.

4.2.8– Professional Exam Results (Fundamentals of Land Surveying (FS))

Performance Criteria: The geomatics department expects a 90% passing rate for seniors taking the Fundamentals of Land Surveying Exam.

Exam Date	Pass Rate
April 2013 (2 examinees)	50%
October 2013 (3 examinees)	67%
Jan 01 – May31, 2014 (3 examinees)	67%

Table 4.10 – FS Exam pass rates for April 2013, October 2013, and Jan 01-May 31 2014 test block.

Assessment Results

FS exam results for this assessment period were significantly below department expectations. The geomatics department has set an expectation of 90% passing rate and the best achieved during this time period was a 67%. Topic areas that seemed to cause the most concern for students included basic sciences, photo and image data acquisition and reduction, graphical communication, and land development principles.

Actions to be taken

Faculty will review the weak areas identified above prior to the 2014/2015 academic year and seek to incorporate more basic knowledge in these areas into regular course.

4.2.9– Summary of Alumni Survey Results

The Geomatics alumni survey was administered at an alumni gathering at the 2014 Professional Land Surveyors (PLSO) conference held on January 2014. The purpose of the survey is to gather feedback from alumni regarding how their course work at Oregon Tech prepared them for professional practice. Fourteen alumni completed the survey. The amount of time each participant had been out of schooled ranged from two years to 30 years. Below is a brief summary of some of the important points highlighted by the survey:

1. 86% of respondents felt that boundary and cadastral surveying was highly relevant to their practice. Under this category, they felt that writing legal descriptions, public land survey, and boundary law was among the most important course work in the Oregon Tech geomatics program.
2. Of the various specialized technologies in geomatics 64% of respondents felt that GNSS was highly relevant to their practice, 36% thought photogrammetry and remote sensing were moderately relevant, 36% thought GIS was moderately relevant, and 29% thought laser scanning was highly relevant.
3. When asked to comment on the program, respondents were neutral. Only one respondent commented that the boundary law sequence was beneficial to their success on the licensure exam.

From those that responded, the majority seem to place a high value on their boundary/cadastral training at Oregon Tech and a lesser value on technology specific education. The numbers from this survey tend to point to a need for continued emphasis on boundary/cadastral education and a better integration of modern technologies (remote sensing and GIS) in boundary related problems.

5. Evidence of Student Learning

5.1 Summary of Department Discussions on Assessment Activities

September 18, 2013 – Geomatics department faculty met to review the department mission, Program Learning Objectives, and Program Student Learning Outcomes. Faculty agreed to continue with the above stated items as listed in the 2012/2013 assessment report.

June 3, 2014 – Geomatics faculty met to review assessments conducted during the 2013/2014 assessment cycle and discuss 2014/2015 assessments. Faculty also discussed strategies for instructing courses that will not have an instructor next year with the retirement of Professor Duryea.

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 a-k PSLOs. The senior exit survey shows that students are still not making the connection between the PSLOs when they assess their own learning. Faculty believe that educating the students on the PSLOs and their relationship to classwork will improve the senior exit survey results as direct assessment of PSLOs shows the students are performing at or above the departmentally established bases.
2. Pass rates for the FS exam are significantly below the 90% level mandated by the department. Specific areas of weakness have been identified from NCEES exm results and GME faculty will work increase student exposure to these areas in class. Faculty will also discuss other FS exam prep strategies that might better prepare students for successful completion of the exam.
3. As the geomatics survey option continues to evolve, faculty need to remain focused on the boundary/cadastral part of the curriculum. Alumni and IAC members continue to stress the importance of this part of the Oregon Tech education.

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:

PLSO (c) – "An ability to formulate or design a system, process or program to meet desired needs" was re-assessed as a result of scores that did not match department requirements in the 2012-2013 assessment cycle. Students achieved the departmental requirements for the re-assessment, but the areas of drawing quality and timeliness of product delivery will continue be monitored as these two areas were still lower than expected (75% for both).

Senior Exit Survey - The 2012/2013 senior exit survey showed a dramatic drop in the number of respondents who felt that they were "Prepared" or "Well Prepared" for the PSLOs a through k. The 2013/2014 senior exit survey shows improvement, but the goal of having all graduating seniors feel "Prepared" or "Well Prepared" in all categories has still not been attained. Faculty will incorporate additional effort into educating the students about the Program Student Learning Outcomes (PSLO) and how they relate to their course work.

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
2013/2014

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

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

	Freshman		Sophomore		Junior		Senior	
Fall	GME 161		GME 163		GME 343		GME 425	
	WRI 121		GME 241		MIS 115		GME 451	
	MATH 112		MATH 254N		WRI 327		Humanities Elec.	
	Social Science Elec.		PHY 221		Science Elec.		Social Science Elec.	
Winter	CIV 112		GME 242		GME 466		GME 434	
	GME 175		GME 264		GIS 316		GME 452	
	MATH 251		PHY 222		SPE 321		GME 454	
	WRI 122		WRI 227		GME/GIS Elec.		Science Elec.	
			Social Science Elec.		MATH Elec.			
Spring	GME 134		GME 372		GME 351		GME 468	
	GME 162		MATH 361		GME 444		Business Elec.	
	MATH 252		MIS 275		BUS 226		Humanities Elec.	
	SPE 111		PHY 223		MGT 345		Social Science Elec.	
					Humanities Elec.			

PSLO (d) "An ability to function on multi-disciplinary teams"

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

	Freshman		Sophomore		Junior		Senior	
Fall	GME 161		GME 163		GME 343		GME 425	
	WRI 121		GME 241		MIS 115		GME 451	
	MATH 112		MATH 254N		WRI 327		Humanities Elec.	
	Social Science Elec.		PHY 221		Science Elec.		Social Science Elec.	
Winter	CIV 112		GME 242		GME 466		GME 434	
	GME 175		GME 264		GIS 316		GME 452	
	MATH 251		PHY 222		SPE 321		GME 454	
	WRI 122		WRI 227		GME/GIS Elec.		Science Elec.	
			Social Science Elec.		MATH Elec.			
Spring	GME 134		GME 372		GME 351		GME 468	
	GME 162		MATH 361		GME 444		Business Elec.	
	MATH 252		MIS 275		BUS 226		Humanities Elec.	
	SPE 111		PHY 223		MGT 345		Social Science Elec.	
					Humanities Elec.			

PSLO (f) “An understanding of professional and ethical responsibility”

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

	Freshman		Sophomore		Junior		Senior	
Fall	GME 161		GME 163		GME 343		GME 425	
	WRI 121		GME 241		MIS 115		GME 451	
	MATH 112		MATH 254N		WRI 327		Humanities Elec.	
	Social Science Elec.		PHY 221		Science Elec.		Social Science Elec.	
Winter	CIV 112		GME 242		GME 466		GME 434	
	GME 175		GME 264		GIS 316		GME 452	
	MATH 251		PHY 222		SPE 321		GME 454	
	WRI 122		WRI 227		GME/GIS Elec.		Science Elec.	
			Social Science Elec.		MATH Elec.			
Spring	GME 134		GME 372		GME 351		GME 468	
	GME 162		MATH 361		GME 444		Business Elec.	
	MATH 252		MIS 275		BUS 226		Humanities Elec.	
	SPE 111		PHY 223		MGT 345		Social Science Elec.	
					Humanities Elec.			

PSLO (g) “An ability to communicate effectively”

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

	Freshman		Sophomore		Junior		Senior	
Fall	GME 161		GME 163		GME 343		GME 425	
	WRI 121		GME 241		MIS 115		GME 451	
	MATH 112		MATH 254N		WRI 327		Humanities Elec.	
	Social Science Elec.		PHY 221		Science Elec.		Social Science Elec.	
Winter	CIV 112		GME 242		GME 466		GME 434	
	GME 175		GME 264		GIS 316		GME 452	
	MATH 251		PHY 222		SPE 321		GME 454	
	WRI 122		WRI 227		GME/GIS Elec.		Science Elec.	
			Social Science Elec.		MATH Elec.			
Spring	GME 134		GME 372		GME 351		GME 468	
	GME 162		MATH 361		GME 444		Business Elec.	
	MATH 252		MIS 275		BUS 226		Humanities Elec.	
	SPE 111		PHY 223		MGT 345		Social Science Elec.	
					Humanities Elec.			