GEOMATICS DEPARTMENT
GIS OPTION
Oregon Institute of Technology
NWCCU Assessment Report
Spring Quarter 2014 through Winter Quarter 2015

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 62 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 (2010)	Year (2011)	Year (2012)	Year (2013)	Year (2014)
Full-time Students	7	7	9	7	9

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

Table 1.1 – Geomatics – GIS Option 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 (2010)	Year (2011)	Year (2012)	Year (2013)	Year (2014)
First-time Students	1	1	3	3	5

Reported values represent graduations as recorded by Oregon Tech Institutional Research for the Geomatics-GIS Option

Table 1.2 – Geomatics – GIS Option 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 17, 2014 the Geomatics department faculty met and reviewed the department mission, program educational objectives (PEOs) and Program Student 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 criteria.

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. Intermountain GIS conference
3. ESRI ArcUsers conference
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 GME Student Chapter meetings.
6. 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 2014/2015 PSLO/ISLOs.

Table 4.1 summarizes the PSLO/ISLOs that will be assessed during the 2014/2015 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.

PSLO	ISLO	Course	Faculty	Term	Method
(h) The broader education necessary to understand the impact of solutions in a global and societal context.		GME241 GME 466	Walker Marker	Fall 2014 Winter 2015	Final Exam Question Final Exam
(i) A recognition for and ability to engage in life-long learning.		GME161 GME468	Marker Duryea	Fall 2014 Spring 2014	Exam Question Homework Exercise
(j) A knowledge of contemporary issues		GME425 GME454/ 455	Walker Marker	Fall 2014 Winter 2015	Exam Question Rubric scored presentation
(k) An ability to use techniques, skills, and modern scientific and technical tools necessary for professional practice.		GME162 GME454/ 455	Duryea Marker	Spring 2014 Winter 2015	Lab Project (Traverse) Exam Question

Table 4.1 – PSLO/ISLOs to be evaluated during the 2014/2015 assessment cycle

4.2 Summaries of individual assessment activities

4.2.1 PSLO (h) - "The broader education necessary to understand the impact of solutions in a global and societal context**".**

Performance Criteria: The student will:

1. **Identify** one or more solutions to the presented problem
2. **Identify** the impact of selected solution(s) on effected parties
3. **Provide** evidence to support why a particular solution was selected
4. **Understand** professional limitations and need for multidisciplinary input

Students are rated on the following scores:

1. No or limited proficiency
2. Some proficiency
3. Proficiency
4. High proficiency

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify one or more solutions to presented problem	Instructor scored rubric	1 to 4 scale	70%	100%
Identify impact of selected solution on affected parties	Instructor scored rubric	1 to 4 scale	70%	100%
Provide evidence to support selection of solution	Instructor scored rubric	1 to 4 scale	70%	100%
Understand professional limitations and need for multi-disciplinary approach	Instructor scored rubric	1 to 4 scale	70%	100%

Number of students assessed = 7

Table 4.1 – Student performance on PSLO (h) in GME 466 Winter Quarter, 2015

Assessment Results

All assessments were above the established minimum of 70%. As an overall group, this class met or exceeded department expectations.

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.

4.2.2 PSLO (i) – "A recognition of the need for, and the ability to, engage in life-long learning"

Performance Criteria: Students must demonstrate the following:

1. **Define** life-long learning.
2. **Describe** why life-long learning is important to a practicing professional.

Students are rated on the following scores:

0. Student was unable to define life-long learning and/or describe why it is important to the practicing professional.
1. Student was able to define life-long and/or describe why it is important to the practicing professional.

Departmentally Expected Score:

For PSLO (i), the geomatics department expects that 70% or more of students evaluated will score a 1 in both categories.

Assessment results for this cycle:

PSLO (i) – "A recognition of the need for, and ability to engage in, life-long learning" assessed in GME161 – Plane Surveying I Fall Quarter 2014.

The first unit of study in GME161 – Plane Surveying I introduces students to the profession of geomatics, including path to licensure, professional ethics, and the need for life-long learning as a practicing professional. Students must complete a homework assignment covering these topics. Students are assessed on their retention of knowledge about life-long learning with a final exam question asking them to define the term and explain why it is important to a practicing professional.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Define the term "life-long learning"	Exam Question	0 or 1	70%	100%
Describe why life-long learning is important	Exam Question	0 or 1	70%	91%

Number of students assessed = 34

Table 4.2 – Student performance on PSLO (i) in GME 161, Fall 2014

Assessment Results

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

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.

4.2.3 PSLO (j) – "A knowledge for contemporary issues" assessed in GME 454/455 – GNSS Surveying Applications Winter Quarter 2015, GME 425 – Remote Sensing Fall Quarter of 2014, and GIS 103 – The Digital Earth in Fall Quarter of 2014.

Students in GME 454/455 – GNSS Surveying Applications are required to research a topic within the subject of GNSS applications that includes either a new technology in GNSS or a new application of GNSS technology. Each student is expected to become an expert on a current event by researching the topic and then giving a 10 minute presentation to the class. At the end of the presentation, the presenter is expected to address questions from the class.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Topic selection	Instructor scored rubric	1 to 4 scale	70%	100%
Content	Instructor scored rubric	1 to 4 scale	70%	100%
Timeliness	Instructor scored rubric	1 to 4 scale	70%	100%
Understanding of potential	Instructor scored rubric	1 to 4 scale	70%	100%

Number of students assessed = 5

Table 4.3 – Student performance on PSLO (j) in GME 454/455 Winter Quarter, 2015.

Assessment Results

All assessments were above the established minimum of 70%.

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.

Students in GME 425 – Remote sensing are required to learn about the most current technologies available in the field of photogrammetry/remote sensing. During the course of the quarter, students learn about these technologies both through reading, lecture and lab exercises. Their knowledge about current technologies is then tested on the final exam.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
"Big Picture" understanding of contemporary issues	Exam Question	1 to 4 scale	70%	75%
Understand societal impacts of contemporary issues	Exam Question	1 to 4 scale	70%	75%
Understand professional impact of contemporary issues	Exam Question	1 to 4 scale	70%	75%

Number of students assessed = 8

Table 4.4 – Student performance on PSLO (j) in GME 425, fall quarter 2014.

Assessment Results

All assessments were above the established minimum of 70%.

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.

Students in GME 103 – The Digital Earth are required to identify applications of GIS technology to contemporary problems. The students are required to identify three current problems where GIS technology could be used to either facilitate development of a solution or provide the solution. This was required on the final exam after the students had been introduced to GIS concepts and data appropriate for the solution of technical and social problems.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Identify three contemporary technical or social problems where GIS could be used to facilitate or generate a solution.	Exam Question	1 to 4 scale	70%	87%
Be able to describe how GIS could facilitate or generate a solution for the described problems.	Exam Question	1 to 4 scale	70%	87%

Number of students assessed = 22

Table 4.5 – Student performance on PSLO (j) in GIS 103, fall quarter 2014.

4.2.4 PSLO (k) – "An ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice".

Performance Criteria: Students must demonstrate the ability to:

1. **Design a GNSS Static network** that provides coordinate values for control points that meet specified standards.
2. **Proper execution of design** that results in data that meets project standards.
3. **Data processing** that produces coordinates for control points that meets the project standards. The end product of the data processing is a report that summarizes the results of the data reduction and demonstrates that the data meets the required standards.

Students are rated on the following scores:

1. No/limited proficiency
2. Some proficiency
3. Proficiency
4. High proficiency

Departmentally Expected Score:

For PSLO (k), the geomatics department expects that 70% or more of students evaluated will score a 3 or a 4 in all categories.

PSLO (k) – "An ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice" assessed in GME 454/455 – GNSS Survey Applications, Winter Quarter, 2015.

In this exercise, students are expected to design a GNSS static control network that meets specific standards. Students will then design an observation plan, collect data in the field, organize and collate the data for processing, and process the observations. The end product will include a report that summarizes the quality control check, adjustment results, and final coordinates for the network.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Network design	Lab Exercise	1 to 4 scale	70%	100%
Execution of design in field	Lab Exercise	1 to 4 scale	70%	100%
Data Processing	Lab Exercise	1 to 4 scale	70%	100%

Number of students assessed = 4

Table 4.6 – Student performance on PSLO (k) in GME 454/455 Winter Quarter, 2015.

Assessment Results

All assessments were above the established minimum of 70%.

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.

4.2.5 - 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 May 23, 2014, November 14, 2014, and January 15, 2015. The following items critical to program improvement were discussed at these meetings:

1. **Departure of Professor Mitch Duryea** (Survey option faculty) at end of spring quarter, 2014. Professor Duryea's departure from Oregon Tech was announced in the May 23, 2014 IAC meeting. IAC members where informed of the following issues that will be created by his departure in June:
    a. The geomatics department will be unable to fill his position with a new faculty member. Current budget issues at the school make filling this

position a low priority until other programs that have had vacant positions longer can be brought up to full strength. This is also coupled with the low enrollment in the both options at this time. Student enrollment needs to be at approximately 20 students per faculty before administration will consider filling the vacant position.

b. Curriculum will have to be modified in order to maintain full class coverage utilizing three fulltime faculty. Currently faculty are looking at reducing lab hours in some courses, dropping two courses, and adding two GIS courses into the survey option curriculum to balance work load for remaining faculty. This strategy is perceived to have a minimum impact on student degree completion or program quality.

c. The Geomatics department will have to begin aggressive recruiting for adjunct faculty in the local professional community. Regular faculty will not be able to cover all of the lab sections without support from adjunct faculty. At this time (23May14) it appears that there is sufficient interest in the local professional community to cover the need for adjunct staff.

2. **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. IAC members would like to see an increased effort in social media. Particularly regular updates to Facebook page. The Department Chair indicated a student could be employed under work study and this task could be accomplished for minimal cost.
    d. IAC members felt that posting short instructional videos on YouTube may help to increase interest in the program. The hope is that these videos may help funnel perspective students to the program web page or social media.

IAC members also reviewed the curriculum and program content changes that were proposed to reduce the impact of Professor Duryea's departure. The main concern that was expressed was that any reduction in credit hours to survey course work did not impact the legal sequence of courses.

4.2.6 – 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.

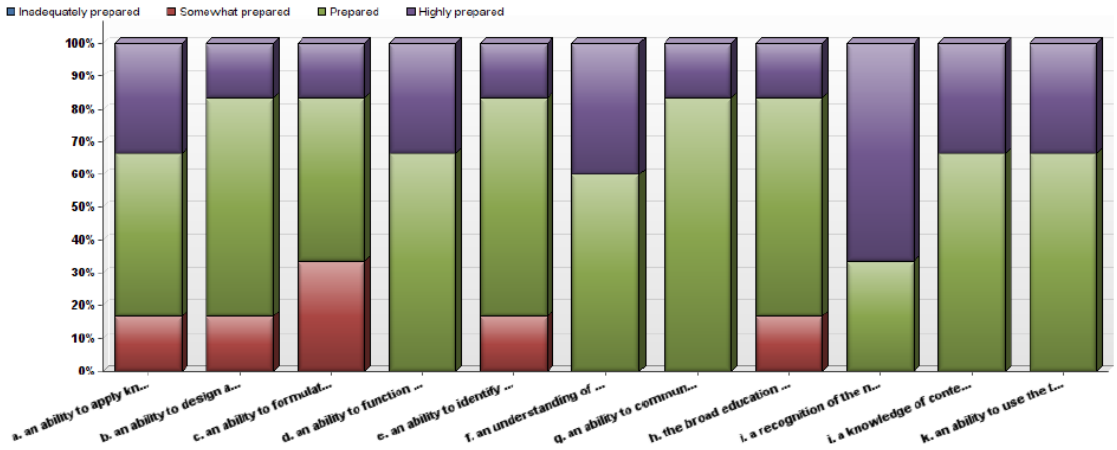

Figure 4.1 – Senior exit survey results for student individual feeling of preparation for each PSLO. Graph represents results of spring 2014 survey.

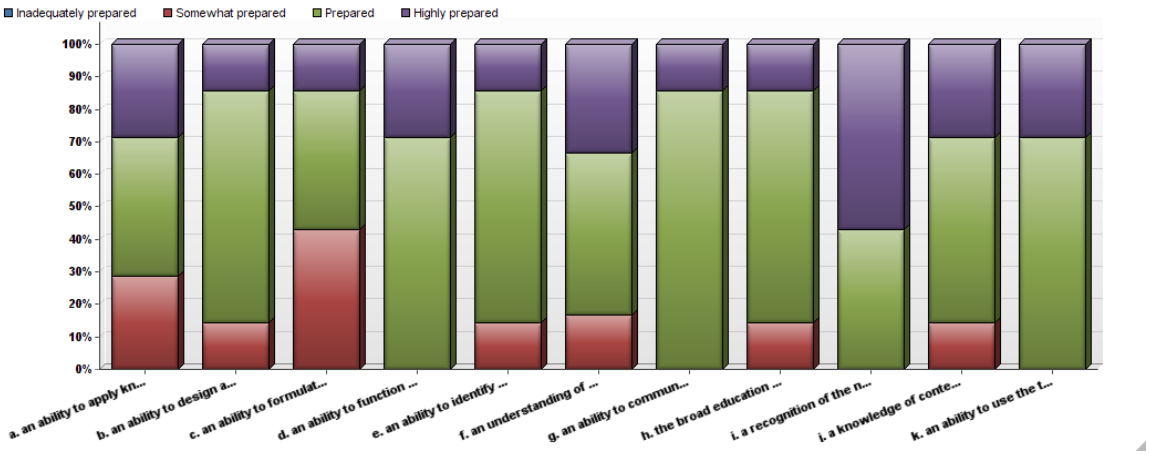

Figure 4.2 – Senior exit survey results for student individual feeling of preparation for each PSLO. Graph represents results of spring 2013 survey.

Assessment Results

Comparison of Figure 4.1 and Figure 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 still falling short of the stated goal with PSLOs a, b, c, e, and h. 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.
While graduating seniors still have difficulty making the connection between what the know and the PSLOs, alumni surveys (2013-2014 assessment) show that students find themselves to be prepared or highly prepared in all areas once they have entered the work world and can connect the learning outcomes with the tasks that they are expected to complete in industry.

Actions to be taken

Faculty discussion of these results has focused on better educating our students on the PSLOs, 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 2015/2016 academic year to tie the PSLOs to classroom activities so that students better understand the relationship. Specifically, faculty will include a brief statement about the particular learning outcome that is being covered on major assignments. This will provide the students with specific exercises and projects that are connected to the learning outcomes.

5. Evidence of Student Learning

5.1 Summary of Department Discussions on Assessment Activities

September 17, 2014 – 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 2013/2014 assessment report. Faculty also discussed division of assignment (not teaching loads) that will be necessary with the department being short one faculty member.

February 27, 2015 – Geomatics faculty met to review assessments conducted during the 2014/2015 assessment cycle and discuss 2015/2016 assessments.

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.

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 2014 senior exit survey showed an improvement in how students view themselves as being prepared for the (a) through (k) assessed outcomes over the 2013 senior exit survey. The survey still shows that in the PSLOs (a), (b), (c), (e), and (h) some students do not feel adequately prepared. Helping students make the connection between what they are learning in class and the outcomes that faculty, the institution, and their profession expect of them will continue to be a focus over the upcoming assessment cycle.

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 – GIS Option
Appendix A - PSLO Curriculum Map
2014/2015

PSLO (h) "The broader education necessary to understand the impact of solutions in a global and societal context".

	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 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.			

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

PSLO (i) “A recognition of the need for, and ability to engage in, life-long learning”.

Shaded courses indicate that the PSLO 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 175		GME 264		GIS 316		GME 452	
	MATH 251		PHY 222		SPE 321		GME 454	
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					Humanities Elec.			

PSLO (j) “A knowledge of contemporary issues”.

Shaded courses indicate that the PSLO 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.	
	GIS 103							
Winter	CIV 112		GME 242		GME 466			
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	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 (k) "An ability to use the techniques, skills, and modern scientific and technical tools necessary for professional practice"

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 175		GME 264		GIS 316		GME 452	
	MATH 251		PHY 222		SPE 321		GME 454	
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	GME 162		MATH 361		GME 444		Business Elec.	
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