

**GEOMATICS DEPARTMENT  
SURVEY OPTION  
Oregon Institute of Technology  
NWCCU Assessment Report  
2020-2021 Academic Year**

**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 67 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 (Geomatics - Surveying Option Students)**

<b>Fall Terms</b>	<b>Year (2016-17)</b>	<b>Year (2017-18)</b>	<b>Year (2018-19)</b>	<b>Year (2019-20)</b>	<b>Year (2020-21)</b>
<b>Full-time Students</b>	30	41	34	38	21

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

**Table 1.1 – Geomatics department 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.

<b>Fall Terms</b>	<b>Year (2016-17)</b>	<b>Year (2017-18)</b>	<b>Year (2018-19)</b>	<b>Year (2019-20)</b>	<b>Year (2020-21)</b>
<b>Students</b>	7	6	6	13	9

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

**Table 1.2 – Geomatics – Survey Option degrees awarded**

### 1.4 Employment Rates and Salaries

2018 graduates reported a salary range from \$42,000 to \$64,000 for initial starting salary. 67% of students indicated that they also received a signing bonus but did not indicate the value of these bonuses.

## 2. Program summary

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

On September 18, 2020 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)**

- (1) An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.
- (2) An ability to formulate or design a system, process, procedure or program to meet desired needs.
- (3) An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.
- (4) An ability to communicate effectively with a range of audiences.
- (5) An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
- (6) An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

**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. 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. In 2020, two Geomatics students won the NSPS Student Project of the Year that involved a surveying/GIS application.
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 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 15/16	AY 16/17	AY 17/18	AY 18/19	AY 19/20	AY 20/21
(1) An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.	6	GME175 GIS306			GME175 GIS306		
(2) An ability to formulate or design a system, process, procedure or program to meet desired needs.	4	GIS306 GME468			GIS306 GME468		
(3) An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.	2		GME241 GIS316			GME241 GIS316	
(4) An ability to communicate effectively with a range of audiences.	1		GME161 GME468			GME161 GME468	
(5) An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.	3			GME162 GME454/455			GME162 GME454/455
(6) An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.	5			GIS205 GME468			GIS205 GME468

<b>Additional PSLO Assessments</b>							
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**

**NOTE: The IAC did not meet during 2019 and 2020 due to the pandemic. GME 162 did not assess PSLO #5 during 2019 due to the pandemic.**

#### **4. Summary of Current Academic Year Assessment Activities**

The Department’s previous Assessment Coordinator terminated their employment with OT in the Spring of 2021. It was subsequently discovered that they had not filed assessment reports for the previous three academic years. None of the assessment data collected during those three years is available.

#### **5. Evidence of Student Learning**

##### **5.1 Summary of Department Discussions on Assessment Activities**

**September 18, 2020** – Geomatics Department Faculty Meeting (Convocation)

The department faculty met and discussed the following items with respect to assessment:

- No changes were deemed necessary for the department’s mission statement, Program Learning Objectives (PLSOs), or Student Learning Objectives.
- Changes had been made to the PLSOs during the 2018/19 academic year to align with the new ABET 1-7 student outcomes so that the new six-year cycle can be started with the new PSLOs.
- GME 425 (Photogrammetry) underwent a course redesign during the 2017/18 academic year in order to incorporate drone imagery and flight planning for the department’s new drone.
- Geomatics faculty are very happy with the 100% pass rate on the NCEES FS exam in recent years. Faculty will continue to incorporate discussions of FS exam topics into relevant courses and support students in forming study groups to prepare for the exam. Faculty will also encourage students to wait until spring quarter of their senior year in order to ensure that they have had course work on all of the topics covered on the FS exam.

## **January 28, 2021 – Geomatics Department Faculty Meeting**

The department faculty met and discussed the following items with respect to assessment:

- Reviewed which assessments will take place in which term and assigned each instructor the task of identifying assignment/test/project to be assessed and preparing assessment criteria and rubric.
- Faculty discussed the movement of proposing a graduate GIS program to work in tandem with a simultaneously proposed Community Research Center.
- Faculty agreed on a common, easily accessible location for department syllabi.
- Updates of curriculum maps were discussed as per changes in General Education courses.
- Discussion was had on the possibility of adopting MIS 285 instead of MIS 118 for surveying students and how each would mesh with PLSOs.
- Discussion was had on the progress of the online GIS degree and a possible GIS certificate.
- Discussion was had on a transfer agreement with East Los Angeles College for both degree options.

## **March 19, 2021 – Geomatics Department Faculty Meeting**

The department faculty met and discussed the following items with respect to assessment:

- Student Satisfaction Survey
- Status of assessment activity to date for the current academic year
- Catalog narrative changes
- Status of online degrees

### **5.2 Summary of Faculty Decisions on Program Improvements**

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

- While students generally meet all of the departmentally required minimums, the scores in communication are generally lower than desired and in need of improvement. Historically, writing assignments and presentations have been scored by one faculty member. The idea of having the faculty will meet corporately to evaluate these PSLOs and develop a group score was discussed. Faculty could then decide if additional measures need to be taken in order to improve student writing and public speaking capabilities.

## **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** – data from the Senior Exit Survey for 2020 are not available.

Casual conversations during the year indicate that student progress toward program and student learning objectives were adequate to excellent for the courses under assessment for the 2019-2020 academic year.

**NCEES Fundamentals of Surveying Exam Results** – The department expectation for students taking the NCEES Fundamentals of Surveying Exam is 90%. The data available from NCESS for this assessment cycle shows students passing this exam at the 100% level. Faculty will continue to encourage students to form study groups and take the exam during the spring quarter of their senior year. This approach has now produced two consecutive years of 100% pass rates.



## 8. Appendices

### Geomatics – Survey Option Appendix A - PSLO Curriculum Map 2020/2021

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

(5) An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.

	Freshman		Sophomore		Junior		Senior	
<b>Fall</b>	GIS 103		GME 163		GIS 306		BUS 304	
	GME 161		GME 241		GME 343		GME 425	
	MATH 112		MATH 254		MIS 113		GME 451	
	WRI 121		PHY 221		WRI 227		MIS 118	
					Social Science Elec.			
<b>Winter</b>	CE 203		GME 242		GIS 316		GME 452	
	GIS134		GME 264		GME 466		GME 454	
	GME 175		PHY 222		SPE 321		Social Science Elec.	
	MATH 251		WRI 227		ENV/GIS/GME Elec.		Science Elec.	
	Social Science Elec.		Social Science Elec.		Math Elec.			
<b>Spring</b>	GIS 205		GME 372		BUS 226		GME 468	
	GME 162		MATH 361		GME 351		Business Elec.	
	MATH 252		PHY 223		MGT 345		Humanities Elec.	
	SPE 111		Humanities Elec.		GME 444		Science Elec.	
					Humanities Elec.			

(6) An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

	<b>Freshman</b>		<b>Sophomore</b>		<b>Junior</b>		<b>Senior</b>	
<b>Fall</b>	GIS 103		GME 163		GIS 306		BUS 304	
	GME 161		GME 241		GME 343		GME 425	
	MATH 112		MATH 254		MIS 113		GME 451	
	WRI 121		PHY 221		WRI 227		MIS 118	
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