



## 2016-17 Program Assessment Report

### Applied Mathematics B.S.

#### Mission, Objectives & Learning Outcomes

##### **Oregon Tech Mission**

Oregon Institute of Technology, an Oregon public university, offers innovative and rigorous applied degree programs in the areas of engineering, engineering technologies, health technologies, management, and the arts and sciences. To foster student and graduate success, the university provides an intimate, hands-on learning environment, focusing on application of theory to practice. Oregon Tech offers statewide educational opportunities for the emerging needs of Oregonians and provides information and technical expertise to state, national and international constituents.

##### **Core Theme 1: Applied Degree Programs**

Oregon Tech offers innovative and rigorous applied degree programs. The teaching and learning model at Oregon Tech prepares students to apply the knowledge gained in the classroom to the workplace.

##### **Core Theme 2: Student and Graduate Success**

Oregon Tech fosters student and graduate success by providing an intimate, hands-on learning environment, which focuses on application of theory to practice. The teaching and support services facilitate students' personal and academic development.

##### **Core Theme 3: Statewide Educational Opportunities**

Oregon Tech offers statewide educational opportunities for the emerging needs of Oregon's citizens. To accomplish this, Oregon Tech provides innovative and rigorous applied degree programs to students across the state of Oregon, including high-school programs, online degree programs, and partnership agreements with community colleges and universities.

##### **Core Theme 4: Public Service**

Oregon Tech will share information and technical expertise to state, national, and international constituents.

##### **Program Alignment to Oregon Tech Mission and Core Themes**

The Applied Mathematics Program aligns with the Oregon Tech Mission and Core Themes in the following ways:

- Core Theme 1: The Applied Mathematics Program is a rigorous applied program where students learn the skills needed to succeed in mathematically oriented graduate programs. In addition, graduates of the Applied Mathematics program are prepared to enter the workforce in a wide-variety of professions both in the private and public sectors.

- Core Theme 2: The Applied Mathematics Program has approximately 45 to 50 students, most are earning dual degrees. The Junior/Senior courses have an excellent (low) faculty to student ratio and program advisors have a small number of advisees allowing for intimate learning and support environments. Students in the Applied Mathematics program are required to take 3 courses in Physics each including a lab section that provides hands-on learning environment. The Applied Mathematics students learn mathematical theory related to applications and solve problems analytically or by computer computation. In the case of computer computation, students write computer code employing numerical methods. As part of the degree requirement for Applied Mathematics, students choose to take a sequence of mathematically related courses that are applied in nature. These "external" focused electives are intended to give the graduate a breadth of applied knowledge.

### **Program Mission**

Graduates with the Applied Mathematics Degree will have knowledge and appreciation of the breadth and depth of mathematics, including the connections between different areas of mathematics, and between mathematics and other disciplines. They will be prepared for immediate participation in the workforce, or for graduate study.

### **Program Educational Objectives**

- Apply critical thinking and communication skills to solve applied problems.
- Use knowledge and skills necessary for immediate employment or acceptance into a graduate program.
- Maintain a core of mathematical and technical knowledge that is adaptable to changing technologies and provides a solid foundation for future learning.

### **Program Faculty Review**

Program Student Learning Outcomes and Objectives were reviewed by program faculty during Fall Convocation Program Assessment Meeting.

The program faculty met on September 20, 2017 in Owens 141 at 4PM. We reviewed the program mission and program student learning outcomes (PSLOs). The program faculty see no reason to make any changes.

### **Showcase Learning Opportunities**

In addition to coursework, students can participate in the department's colloquium series, attend regional mathematics conferences and/or compete in the national COMAP competition.

## **Program History & Vision**

### **Program History**

The Applied Mathematics Degree was approved by the Oregon University System in the spring of 2006, and the program was implemented beginning in the fall of that year. We have had problems identifying our students because some of them are dual majors and do not need to declare themselves as an Applied Math major or have a math advisor until two terms before graduating. The program graduated its first student in the Spring of 2008, see the table below for graduation numbers.

### **Meeting with Advisory Board**

Program faculty held a meeting with their Advisory Board during the academic year.

### **Advisory Board Review**

The Advisory Board reviewed the Program Mission and Objectives during the academic year.

Program faculty held a meeting with their Advisory Board in the 2016-17 academic year.

### Advisor Board (As of June 2007)

*IGT: Mark Bansemer*

Email: Mark.Bansemer@IGT.com

Note: Mark is also serving on the president's advisory board.

Portland State University:

*Professor Gerardo Lafferriere*

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Applied Mathematics

### **Program Enrollment**

The Applied Math program has steadily grown since its inception. Currently we have approximately 40 to 50 majors, most of which are earning the math degree as a second or dual degree. The national trend for mathematics majors is approximately 1 to 1.5% of total student population. Oregon Tech seems to match the national trend (Klamath Falls has about 3,500 total students, 1.5% of 3500 is about 52).

Currently the Applied Math Major is not available to Wilsonville campus students. However, the department is working on offering our course math courses in Wilsonville by putting in place the necessary equipment for distance delivery. In other words, students in Klamath Falls will enroll in classes taught by Wilsonville faculty and vice-versa. The department is working with the IT department along with Wilsonville faculty with the goal of making the remote or dual offering of courses happen as soon as possible. One complication is the difference in course day/time between Klamath Falls campus

(traditional) and the Wilsonville campus (non-traditional). The number of additional math majors from Wilsonville is expected to be relatively small (less than 10).

[Attachment 1\\_Enrollment\\_5\\_Year\\_History\\_by\\_Major](#)

**Program Graduates**

[Attachment 2\\_Graduates\\_10\\_Year\\_History\\_by\\_Major](#)

**Employment Rates and Salaries**

[Attachment 3\\_Grad\\_Data\\_First\\_Destination\\_3\\_Year\\_History\\_by\\_Major](#)

**Pass Rates on Board and Licensure Exam**

N/A

**Results of Board or Licensure Exam**

N/A

**Other Program Assessment Data**

N/A

**Closing the Loop**

**Describe any actions taken and re-assessment done during this academic year in response to assessment findings from prior academic years.**

N/A

**Changes Implemented**

N/A

**Assessment Findings**

N/A

**Program Student Learning Outcomes Assessment Cycle**

<b>PROGRAM STUDENT LEARNING OUTCOMES</b>	<b>2016-17</b>	<b>2017-18</b>	<b>2018-19</b>
<b>3-Year Cycle</b> <b>Applied Mathematics B.S.</b>			
OIT-BMTH 2016-17.1 Apply mathematical concepts and principles to perform symbolic computations.	MATH 322		
OIT-BMTH 2016-17.2 Apply mathematics to solve problems.		MATH 421	
OIT-BMTH 2016-17.3 Create, use and analyze graphical representations of mathematical relationships.			

OIT-BMTH 2016-17.4 Communicate mathematical knowledge and understanding.			
OIT-BMTH 2016-17.5 Apply technology tools to solve problems.		MATH 452	
OIT-BMTH 2016-17.6 Perform abstract mathematical reasoning.	MATH 311		
OIT-BMTH 2016-17.7 Learn independently.			

## Assessment Map & Measure

**F – Foundation – introduction of the learning outcome, typically at the lower-division level,**

**P – Practicing – reinforcement and elaboration of the learning outcome, or**

**C – Capstone – demonstration of the learning outcome at the target level for the degree**

**For each outcome, programs should identify at least 2 direct measures (student work that provides evidence of their knowledge and skills), and 1 indirect measure (student self-assessment of their knowledge and skills) for each outcome.**

**For every program, data from the Student Exit Survey will be an indirect measure at the capstone level.**

OIT-BMTH 2016-17.1 Apply mathematical concepts and principles to perform computations.	
<b>Course/Event</b>	MATH 322
<b>Legend</b>	P – Practice
<b>Assessment Measure</b>	Direct – Exam Questions (essay or problem)
<b>Criterion</b>	80% students receive Proficient
<b>Course/Event</b>	Student Exit Survey
<b>Legend</b>	C – Capstone
<b>Assessment Measure</b>	Indirect – Student Exit Survey
<b>Criterion</b>	80% students receive Proficient

OIT-BMTH 2016-17.6 Perform abstract mathematical reasoning.	
<b>Course/Event</b>	MATH 311
<b>Legend</b>	C – Capstone
<b>Assessment Measure</b>	Direct – Exam Questions (essay or problem)
<b>Criterion</b>	80% students receive Proficient
<b>Course/Event</b>	Student Exit Survey
<b>Legend</b>	C – Capstone
<b>Assessment Measure</b>	Indirect – Student Exit Survey
<b>Criterion</b>	80% students receive Proficient

## Analysis of Results

OIT-BMTH 2016-17.1 Apply mathematical concepts and principles to perform computations.	
<b>Criterion</b>	Met
<b>Summary</b>	The program faculty met Sept 20, 2017 and reviewed the data from Math 311 Winter Term (Instructor Randall Paul). We concluded the student performance exceeds our expectations. This has been typical over the years. Our students seem to do very well at symbolic computation.
<b>Improvement Narrative</b>	N/A
<p><a href="#">Attachment 4_LiveText_C1_Assessment_Report_2017_09_21_0125PM_23520</a></p> <p><a href="#">Attachment 5_Outcome_1_Perform_Symbolic_Computation</a></p>	

OIT-BMTH 2016-17.6 Perform abstract mathematical reasoning.	
<b>Criterion</b>	Not Met
<b>Summary</b>	The department has been assessing this PSLO for three consecutive years, Winter terms, Math 311 (Instructors Deb, Fischer, Paul). We assessed student performance on exam questions. We also had general discussion about our opinions on the performance overall concerning abstract reasoning. Our students seem to perform satisfactorily when asked to make a routing statement of logic. See the results where we asked students to state the contrapositive of a given statement. However, we feel that too many of our students are not able to construct complete proofs. This is despite given many opportunities to practice prior to exams. We asked students to write a proof for a standard "epsilon/delta" proposition. Students stumble with both the syntax as well as making logical connections.
<b>Improvement Narrative</b>	<i>Curriculum Change:</i> We feel that our students are not being properly prepared for Math 311 Real Analysis. While the prerequisite Math 327 has some learning outcomes related to abstract reasoning, we decided our applied math students need more. We met several times during the 2016-17 year and concluded that a new course needed to be created. We created a new course "Mathematical Structures", number to be determined via CPC process. A CPC submission will occur Fall term 2017 and we expect to start offering this new course Fall term. The CPC submission will include this new course as well as relevant adjustments to the catalog. This course will replace Math 327 Discrete Mathematics as the prerequisite to Math 311 Real Analysis. The new Mathematical Structures course will strongly address learning outcomes related to abstract reasoning. We communicated with CSET program to ensure that the new course will satisfy their needs so that students will dual enrollment in MATH/CSET can take the new course instead of the current MATH 327 requirement. Note: MATH 327 Discrete Mathematics will

	continue to be offered, primarily for engineering students. The content of MATH 327 will be slightly adjusted.
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[\*Attachment 6\\_LiveText\\_C1\\_Assessment\\_Report\\_2017\\_09\\_21\\_0131PM\\_6449\*](#)

[\*Attachment 7\\_Rubric\\_For\\_Math\\_311\\_Abstract\\_Reasoning\\_PSLO\*](#)

## References

**Program Assessment Coordinator: Jim Fischer, Professor, Mathematics**

**Office of Academic Excellence**

The following data represents majors declared by student as of Fall 4th week. Students with multiple/dual majors have been reported under each major in which they enrolled; therefore the student headcount will be duplicated. A small number of students that declared a third major have now been included in this report. Data reported is combined for all levels and all locations. Some programs may have had name changes such as CLS and have been reported as they were (historically).

Description	Fall 2012	Fall 2013	Fall 2014	Fall 2015	Fall 2016	5 Year Difference	5 Year % Change
ABA Course Series	0	0	3	0	0	0	-
Accounting Certificate	0	0	0	0	1	1	-
Allied Health	0	0	0	0	3	3	-
Allied Health Management	11	5	3	2	1	-10	-90.9%
Applied Behavior Analysis	0	0	0	10	17	17	-
Applied Mathematics	41	38	47	42	33	-8	-19.5%
Applied Psychology	146	149	122	96	110	-36	-24.7%
Automat, Robot, & Cntrl Engr	0	0	0	0	1	1	-
Biology	15	8	1	1	0	-15	-100.0%
Biology-Health Sciences	136	150	150	138	151	15	11.0%
Civil Engineering	127	121	110	120	118	-9	-7.1%
Clinical Lab Science-Earlyadm	6	10	35	22	0	-6	-100.0%
Clinical Laboratory Science	62	85	94	95	2	-60	-96.8%
Communication Studies	55	42	39	47	40	-15	-27.3%
Computer Engineering Tech	82	82	81	86	63	-19	-23.2%
Dental Hygiene	226	240	211	221	202	-24	-10.6%
Diagnostic Medical Sonography	86	104	95	102	112	26	30.2%
Dispute Resolution Certificate	1	1	2	4	2	1	100.0%
Echocardiography	121	119	123	122	128	7	5.8%
Electrical Engineering	76	120	146	164	197	121	159.2%
Electronics Engineering Tech	67	58	51	37	32	-35	-52.2%
Embedded Systems Eng Tech	24	25	32	35	57	33	137.5%
Emergency Medical Services Mgt	0	0	17	20	34	34	-
EMT - Paramedic	29	30	29	28	28	-1	-3.4%
Environmental Sciences	49	49	51	48	42	-7	-14.3%
General Studies	495	736	632	1,031	1,414	919	185.7%
Geomatics	1	0	0	0	0	-1	-100.0%
Geomatics-option in GIS	13	14	10	10	7	-6	-46.2%
Geomatics-option in Surveying	49	39	26	31	30	-19	-38.8%
Health Care Mgmt-Admin Mgmt	0	10	14	19	18	18	-
Health Care Mgmt-Clinical Mgmt	0	4	10	11	25	25	-
Health Care Mgmt-Rad Science	0	3	6	12	12	12	-
Health Informatics	0	0	0	20	38	38	-
Health Sciences	1	1	0	1	2	1	100.0%
Information Technology	0	0	0	56	114	114	-
IT Accounting Option	8	4	2	1	1	-7	-87.5%
IT Applications Dev Opt	91	75	71	48	20	-71	-78.0%
IT Bus/Systems Analysis Opt	58	59	69	51	28	-30	-51.7%
IT Health Informatics Opt	54	68	59	32	17	-37	-68.5%
Magnetic Resonance Imagng Spec	0	0	0	0	4	4	-
Manufacturing Engineering Tech	129	99	109	107	101	-28	-21.7%
Marriage and Family Therapy	0	0	0	0	10	10	-
Mechanical Engineering	208	303	331	323	354	146	70.2%
Mechanical Engineering Tech	145	112	121	121	104	-41	-28.3%
Medical Lab Science-Earlyadm	0	0	0	0	17	17	-
Medical Laboratory Science	0	0	0	0	86	86	-
Mgmt Info Sys/Mgmt Acc Option	1	0	0	0	0	-1	-100.0%
Mgmt/Accounting Option	32	38	35	32	19	-13	-40.6%
Mgmt/Marketing Option	34	34	36	34	37	3	8.8%
Mgmt/Small Bus Mgmt Option	54	43	38	37	33	-21	-38.9%
MIT Applicant	0	0	1	2	0	0	-
Nuclear Medicine Technology	47	51	48	48	49	2	4.3%
Nursing	50	49	52	61	69	19	38.0%
Operations Management	61	66	65	69	70	9	14.8%
Optical Engineering	0	0	3	3	3	3	-
Picture Archive/Comm Sys Spec	0	0	1	2	3	3	-
Polysomnographic Technology	19	13	6	12	5	-14	-73.7%
Population Health Management	0	0	3	24	31	31	-
Pre-Clinical Lab Science	0	8	1	20	2	2	-
Pre-Dental Hygiene	62	65	35	37	48	-14	-22.6%
Pre-Medical Imaging Tech	273	287	253	237	226	-47	-17.2%
Pre-Medical Lab Science	0	0	0	0	27	27	-
Pre-Nursing	56	60	53	69	78	22	39.3%
Pre-Paramedic Education	0	3	3	7	0	0	-
Pre-Renewable Energy Eng	111	0	0	0	0	-111	-100.0%
Pre-Respiratory Care	11	12	8	11	9	-2	-18.2%
Radiologic Science	164	163	154	160	152	-12	-7.3%
Renewable Energy Engineering	110	206	203	180	166	56	50.9%
Respiratory Care	85	84	88	103	117	32	37.6%
Sleep Health-Polysom Tech Opt	0	0	4	6	17	17	-
Software Engineering Tech	260	268	289	309	285	25	9.6%
Spec in Entrepreneur/Small Bus	0	0	0	1	2	2	-
Specialization in Accounting	0	0	0	2	2	2	-
Specialization in Marketing	0	0	1	1	1	1	-
Specialization Travel/Tourism	0	1	0	0	0	0	-
System Engr & Technical Mgmt	0	0	2	3	0	0	-
Technology and Management	16	30	43	46	46	30	187.5%
Vascular Technology	88	95	80	93	98	10	11.4%
<b>Total (Duplicated)</b>	<b>4,146</b>	<b>4,539</b>	<b>4,407</b>	<b>4,923</b>	<b>5,371</b>	<b>1,225</b>	<b>29.5%</b>
<b>Total (Unduplicated)</b>	<b>4,001</b>	<b>4,414</b>	<b>4,273</b>	<b>4,786</b>	<b>5,232</b>	<b>1,231</b>	<b>30.8%</b>

## Attachment 2\_Graduates\_10\_Year\_History\_by\_Major



10 Year History By Major and Degree Type  
As of September 5, 2016

## Specializations

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Picture Archive/Comm Sys Spec	-	-	-	-	-	-	4	4	3	-
Specialization in Accounting	-	-	-	-	-	-	-	1	-	-
Specialization in Marketing	-	-	-	-	-	-	-	2	-	-
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>3</b>	<b>0</b>

## Certificates

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Accounting Certificate	-	-	-	-	-	-	-	-	-	-
Dispute Resolution Certificate	1	2	1	2	4	1	6	11	1	2
Marketing Certificate	-	-	-	-	-	-	-	-	-	-
Polysomnographic Technology	-	-	4	14	13	11	8	6	3	9
<b>Total</b>	<b>1</b>	<b>2</b>	<b>5</b>	<b>16</b>	<b>17</b>	<b>12</b>	<b>14</b>	<b>17</b>	<b>4</b>	<b>11</b>

## Associates

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Associate of Arts	13	8	2	5	-	1	-	-	1	1
Computer Engineering Tech	7	5	3	2	3	-	5	7	6	6
Dental Hygiene	25	26	22	25	18	27	18	23	21	9
Electronics Engineering Tech	3	1	2	1	-	-	-	-	-	-
EMT - Paramedic	19	21	22	25	27	17	28	26	26	29
Office Systems Technology	-	2	2	-	-	-	-	-	-	-
Polysomnographic Technology	-	-	1	2	3	5	6	2	4	-
Respiratory Care	23	16	15	17	-	-	-	-	-	-
Sleep Health-Polysom Tech Opt	-	-	-	-	-	-	-	-	-	3
Software Engineering Tech	7	2	3	2	2	-	-	2	9	2
<b>Total</b>	<b>97</b>	<b>81</b>	<b>72</b>	<b>79</b>	<b>53</b>	<b>50</b>	<b>57</b>	<b>60</b>	<b>67</b>	<b>50</b>

## Bachelors

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Allied Health Management	-	-	-	1	2	4	3	2	1	-
Applied Environmental Science	1	-	-	-	-	-	-	-	-	-
Applied Mathematics	-	-	7	1	5	4	7	4	4	5
Applied Psychology	46	42	37	30	36	38	30	40	37	31
Biology	10	6	16	14	11	11	3	4	1	2
Biology-Health Sciences	-	-	-	-	-	-	10	14	20	18
Civil Engineering	23	23	29	28	20	14	23	17	15	25
Clinical Laboratory Science	23	24	24	22	22	35	27	34	49	46
Communication Studies	13	13	9	10	13	8	19	13	4	8
Computer Engineering Tech	15	7	14	8	13	3	4	3	3	3
Dental Hygiene	35	38	45	55	49	54	51	76	62	65
Diagnostic Medical Sonography	21	24	21	27	29	24	19	31	25	24
Echocardiography	6	4	16	9	21	32	31	32	29	35
Electrical Engineering	-	-	-	6	11	9	11	17	17	26
Electronics Engineering Tech	18	17	13	10	18	16	11	10	10	13

**Bachelors**

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Embedded Systems Eng Tech	-	-	-	1	2	2	4	1	5	3
Emergency Medical Services Mgt	-	-	-	-	-	-	-	-	-	1
Environmental Sciences	1	1	3	1	5	5	4	5	11	14
Geomatics	10	8	5	5	1	-	-	-	-	-
Geomatics-option in GIS	-	-	2	1	1	3	3	5	1	2
Geomatics-option in Surveying	-	-	1	11	13	14	10	13	1	12
Health Care Mgmt-Admin Mgmt	-	-	-	-	-	-	-	-	1	2
Health Care Mgmt-Clinical Mgmt	-	-	-	-	-	-	-	-	1	-
Health Sciences	1	3	2	2	2	6	1	1	-	-
Industrial Management	-	-	-	1	-	-	-	-	-	-
Information Technology	4	4	1	2	-	1	-	-	-	-
IT Accounting Option	-	1	2	1	1	2	1	2	-	-
IT Applications Dev Opt	8	5	13	5	6	8	21	12	8	11
IT Bus/Systems Analysis Opt	1	1	4	10	12	6	12	14	13	8
IT Health Informatics Opt	-	-	-	-	2	4	9	6	14	7
Management Information System	12	2	8	3	-	2	-	-	-	-
Manufacturing Engineering Tech	30	15	16	18	18	9	13	5	11	12
Mechanical Engineering	3	3	17	12	11	19	14	27	23	45
Mechanical Engineering Tech	31	19	31	23	24	19	24	18	17	21
Mgmt Info Sys/Mgmt Acc Option	-	3	-	-	-	-	-	-	-	-
Mgmt/Accounting Option	8	4	3	8	4	9	9	12	5	8
Mgmt/Marketing Option	9	7	5	5	7	8	7	4	7	7
Mgmt/Small Bus Mgmt Option	9	11	11	18	8	6	8	12	4	7
Nuclear Medicine Technology	18	18	16	15	16	16	15	14	14	15
Operations Management	8	6	3	15	7	14	16	13	19	18
Optical Engineering	-	-	-	-	-	-	-	-	1	1
Population Health Management	-	-	-	-	-	-	-	-	-	5
Radiologic Science	47	51	50	53	51	50	48	55	45	56
Renewable Energy Engineering	-	-	6	9	29	35	60	35	29	29
Renewable Energy Systems	-	-	1	-	-	-	-	-	-	-
Respiratory Care	5	8	6	7	10	21	21	21	27	22
Software Engineering Tech	44	36	27	27	31	29	41	31	35	47
System Engr & Technical Mgmt	-	-	-	-	-	-	-	-	-	3
Technology and Management	-	-	-	-	-	-	1	1	11	8
Ultrasound/Diag Med Sono Opt	1	-	-	-	-	-	-	-	-	-
Ultrasound/Vascular Option	1	-	-	-	-	-	-	-	-	-
Vascular Technology	30	30	26	23	23	25	21	28	19	24
<b>Total</b>	<b>492</b>	<b>434</b>	<b>490</b>	<b>497</b>	<b>534</b>	<b>565</b>	<b>612</b>	<b>632</b>	<b>599</b>	<b>689</b>

**Masters**

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Civil Engineering	-	-	-	-	-	-	-	-	2	6
Manufacturing Engineering Tech	3	4	7	2	6	8	12	4	8	9
Renewable Energy Engineering	-	-	-	-	-	-	-	1	11	9
<b>Total</b>	<b>3</b>	<b>4</b>	<b>7</b>	<b>2</b>	<b>6</b>	<b>8</b>	<b>12</b>	<b>5</b>	<b>21</b>	<b>24</b>

**Grand Total**

	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
<b>Grand Total</b>	<b>593</b>	<b>521</b>	<b>574</b>	<b>594</b>	<b>610</b>	<b>635</b>	<b>699</b>	<b>721</b>	<b>694</b>	<b>774</b>

# Attachment 3\_Grad\_Data\_First\_Destination\_3\_Year\_History\_by\_Major

## Oregon Tech Graduate Outcome Data

a=2013/2014/2015 combined	% Employed		% Continuing Ed		% Looking for Work		% Not Looking		Success Rate		Median Salary	
b=2014/2015/2016 combined	a	b	a	b	a	b	a	b	a	b	a	b
<b>% among those reporting outcomes</b>	83.3	87.6	6.1	6.7	9.4	4.9	1.2	0.8	90.6	95.1	\$ 54,000	\$ 56,000
Biology-Health Sciences	36	38	60	62	4	0	0	0	96	100	\$ 20,750	\$ 33,000
Civil Engineering	83	92	11	8	6	0	0	0	94	100	\$ 50,000	\$ 51,540
Communication Studies	60	67	13	11	27	22	0	0	73	78	\$ 27,000	\$ 28,500
Computer Engineering Technology	89	93	0	0	0	0	11	7	100	100	\$ 63,000	\$ 64,000
Dental Hygiene	86	96	4	1	9	2	1	1	91	98	\$ 53,000	\$ 57,500
Diagnostic Medical Sonography	97	98	3	2	0	0	0	0	100	100	\$ 60,000	\$ 60,868
Echocardiography	95	93	0	3	5	3	0	0	95	97	\$ 60,500	\$ 64,000
Electrical Engineering	87	83	0	10	13	7	0	0	87	93	\$ 60,000	\$ 60,000
Electronics Engineering Technology	73	82	7	5	20	14	0	0	80	86	\$ 54,250	\$ 66,750
Embedded Systems Engineering Tech	80	83	0	17	20	0	0	0	80	100	\$ 58,250	\$ 60,000
EMT/Paramedic	100	100	0	0	0	0	0	0	100	100	\$ 48,000	\$ 52,000
Environmental Sciences	67	76	11	18	22	6	0	0	78	94	\$ 39,800	\$ 40,000
Geomatics: GIS	100	100	0	0	0	0	0	0	100	100	\$ 42,000	\$ 42,000
Geomatics: Surveying	69	64	0	9	31	27	0	0	69	77	\$ 40,500	\$ 43,000
Health Care Management	75	80	25	20	0	0	0	0	100	100	\$ 52,000	na
Health Informatics	75	79	10	11	15	11	0	0	85	89	\$ 53,000	\$ 52,000
Information Technology	84	88	0	2	16	10	0	0	84	90	\$ 55,000	\$ 55,000
Management: Accounting	78	83	6	6	17	11	0	0	83	89	\$ 32,000	\$ 32,250
Management: SmBus/Entrepreneurs	77	87	15	13	8	0	0	0	92	100	\$ 33,000	\$ 40,900
Management: Marketing	82	93	0	0	18	7	0	0	82	93	\$ 39,250	\$ 48,500
Manufacturing Engineering Technolo	77	85	5	4	13	11	0	0	87	89	\$ 62,500	\$ 60,000
Mathematics, Applied	60	71	20	29	0	0	20	0	100	100	na	na
Mechanical Engineering	71	82	12	9	10	5	7	4	90	95	\$ 60,000	\$ 60,000
Mechanical Engineering Technology	86	100	7	0	7	0	0	0	93	100	\$ 60,000	\$ 62,500
Medical Laboratory Science	100	100	0	0	0	0	0	0	100	100	\$ 53,750	\$ 55,000
Nuclear Medicine Technology	87	86	0	3	13	11	0	0	87	89	\$ 57,000	\$ 57,846
Nursing												
Operations Management	83	83	11	14	6	3	0	0	94	97	\$ 63,000	\$ 63,000
Polysomnographic Technology	83	100	0	0	17	0	0	0	83	100	\$ 50,000	\$ 40,500
Population Health Management	na	75	na	25	na	0	na	0	na	100	na	\$ 42,000
Psychology, Applied	54	66	24	26	15	5	6	3	85	95	\$ 30,000	\$ 30,000
Radiologic Science	92	97	1	0	6	3	1	1	94	97	\$ 47,000	\$ 50,000
Renewable Energy Engineering	76	83	6	8	18	9	0	0	82	91	\$ 57,000	\$ 56,500
Respiratory Care	97	98	0	0	3	2	0	0	97	98	\$ 56,000	\$ 56,000
Software Engineering Technology	93	91	0	0	3	7	3	3	97	93	\$ 62,250	\$ 66,750
Technology and Management	100	88	0	0	0	12	0	0	100	88	na	na
Vascular Technology	92	91	0	0	8	9	0	0	92	91	\$ 64,602	\$ 62,000

### Additional Notes:

Numbers may not add to 100 due to rounding

na=not reported, or not available due to small sample size

### METHODOLOGY

Sample Frame 2016: 781 degrees awarded per FAST

Survey Response Rate: 49% Total Knowledge Rate 2016: 75%

Sources: Data collected from a variety of sources. Below, for 2016, in chronological order:

Grad Fair paper survey

Faculty senior exit survey

Career Services survey

Career Services followup with non-respondents

Faculty information from their contact with students

LinkedIn Profiles

Salaries of \$2,500 and below and \$250,000 and above were deleted.

Students with dual majors are included under each major

Known Outcomes 2016: 587

Known Outcomes 2013/2014/2015 combined N=1008

Known Outcomes 2014/2015/2016 combined N=1244

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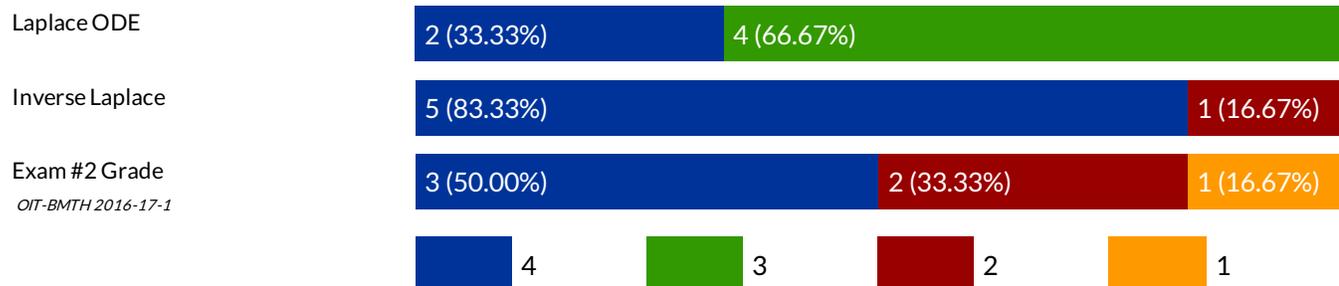
## My Reports - Assessment Report

### General Information

Institution	OR: Oregon Institute of Technology
Assessment Rubric	Outcome 1 Perform Symbolic Computation - Outcome 1 Perform Symbolic Computation (Applied Mathematics B.S.)
Assessor	Paul, Randall <tinker622834>
Inter-Rater Summary	Y

## Rubric: Outcome 1 Perform Symbolic Computation

	4 (4 pts)	3 (3 pts)	2 (2 pts)	1 (1 pts)	Mean	Mode	Stdev
Laplace ODE	2	4	0	0	3.333	3.000	0.471
Inverse Laplace	5	0	1	0	3.667	4.000	0.745
Exam #2 Grade	3	0	2	1	2.833	4.000	1.213



## Inter-Rater Summary

	Paul, Randall	Mean	Stdev
Laplace ODE	3.333	3.333	0.000
Inverse Laplace	3.667	3.667	0.000
Exam #2 Grade	2.833	2.833	0.000

# Outcome 1 Perform Symbolic Computation

by Applied Mathematics B.S.

## Assessment

### Outcome 1 Perform Symbolic Computation

	4 (4.000 pts)	3 (3.000 pts)	2 (2.000 pts)	1 (1.000 pt)
<b>Laplace ODE</b> (1.000, 33%) OIT-BMTH 2016-17.1	Completely correct	Mostly correct with minor algebra errors	Treat initial conditions or non-homogeneous part incorrectly	Fail to apply Laplace transform correctly for ODE
<b>Inverse Laplace</b> (1.000, 33%) OIT-BMTH 2016-17.1	Completely correct	Partial fractions performed incorrectly, otherwise fine.	Either inverse Laplace incorrect	Did not attempt partial fraction
<b>Exam #2 Grade</b> (1.000, 33%) OIT-BMTH 2016-17.1	A on exam	B on exam	C on exam	D or F on exam



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## My Reports - Assessment Report

### General Information

Institution	OR: Oregon Institute of Technology
Assessment Rubric	2016-17 ESLO Communication Rubric - 2016-17 ESLO Communication Rubric (OIT Admin)
Assessor	Paul, Randall <tinker622834>
Inter-Rater Summary	Y

There are no matching records.

# Rubric For Math 311 Abstract Reasoning PSLO

by Applied Mathematics B.S.

## Assessment

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### Learning Outcome

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**OIT-BMTH 2016-17.6** Perform abstract mathematical reasoning.

### Outcome 6 Abstract Reasoning 2016-17

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	<b>High Proficiency</b> (4.000 pts)	<b>Proficiency</b> (3.000 pts)	<b>Some Proficiency</b> (2.000 pts)	<b>Limited</b> (1.000 pt)
<b>State a contrapositive</b> (1.000, 50%)	Both statements completely correct.	One statement completely correct. Minor error (e.g. incorrect quantifier) in error in other statement.	Minor errors in both statements.	Major errors (converse or failure to negate) in one or both statements.
<b>Epsilon Delta proof for Limit of a Function</b> (1.000, 50%)	Clear and correct sequence of logical statements leading to conclusion.	Correct logical statements leading to conclusion, but argument is unclear or statements are out of order.	Argument suggests conclusion, but has some logical errors.	Argument is unclear and logical statements do not lead to conclusion.



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