Bachelor of Science in Mechanical Engineering (BSME)
2021 - 2022 Program Assessment Report

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This report documents the assessment activities undertaken within the Bachelor of Science in Mechanical Engineering (BSME) program at the Oregon Institute of Technology during the 2020-21 academic year.

1. Program Mission and Educational Objectives

The mission statement of the Mechanical Engineering (ME) Program is in-line with and built upon the mission statements of both the Institution and the Department. The ME program's Mission Statement and Program Educational Objectives are stated as:

Mechanical Engineering Program Mission Statement

The Mechanical Engineering Bachelor of Science program at Oregon Institute of Technology is an applied engineering program. Its mission is to provide graduates the skills and knowledge for successful careers in mechanical engineering or related fields.

Program Educational Objectives (PEO)

The program expects graduates to achieve, within several years of graduation, the following objectives. Mechanical Engineering graduates will have:

- demonstrated the ability to analyze, design and improve practical thermal and/or mechanical systems.
- showed the ability to communicate effectively and work well on team-based engineering projects.
- succeeded in mechanical engineering positions.
- pursued continued professional development, including professional registration if desired.
- successfully pursued engineering graduate studies and research if desired.

2. Program Description and History

Program History

The Mechanical Engineering (ME) Program at Oregon Institute of Technology (Oregon Tech) was implemented in fall 2005. It gained initial accreditation by the Engineering Accreditation Commission (EAC) of ABET in fall 2009. Subsequently the program was visited in 2011 and its accreditation continued. The accreditation of the ME program was extended to the Oregon Tech campus in the Seattle, WA area in 2013; and to the Portland-Metro campus in 2018. Enrollment trends from 2015 – 2020 have varied from 205 to 244 students per year in the program.

Program Location: The BSME program is delivered at three campuses within the University –

Klamath Falls, Portland-Metro (in Wilsonville) and Seattle. The MMET Department's other two degree programs (the Bachelor of Science in Mechanical Engineering Technology, BSMET and the Bachelor of Science in Manufacturing Engineering Technology, BSMFG) share a number of common courses with the BSME and thus faculty input from the staff on these programs is also considered when assessing the effectiveness of several Departmental courses.

Program Enrollment:

The program enrollment for each campus, and the program total, are shown below in Table 1 for the last 5 years. Also shown in the % Change in these numbers over the 5-year period.

	2015-16	2016-17	2017-18	2018-19	2019-20	5 Year Difference	5Year % Change
Klamath Falls	205	210	227	241	244	39	19.0%
Portland-Metro	6	13	32	29	42	36	600%
Seattle	120	100	95	88	75	-45	-37.5%
Total	331	323	354	358	361	30	9.1%

Table 1 BSME Program 5-Year Enrollment Data

Program Graduates:

The program graduates for each campus, and the combined total are shown below for the last 5 years.

	2015-16	2016-17	2017-18	2018-19	2019-20
Klamath Falls	28	38	35	38	35
Portland-Metro		2	4	3	8
Seattle	17	12	12	14	12
Total	45	52	51	55	55

Table 2 BSME Program 5-Year Graduate Data

Employment Rates and Salaries:

The Employment rates and salaries for Oregon Tech BSME students shown below. These numbers are the combined results for the 2017/2018/2019 graduating classes.

% Employed	% Continuing Education	% Seeking	% Not Seeking	Medium Salary	Success Rate
96%	1%	3%	1%	$65,000	97%

Table 3 BSME Program Employment Rates and Salaries

3. Program Student Learning Outcomes

The PSLO's for the BSME degree are shown below, and are based on the ABET EAC 1-7 Criterion 3 outcomes.

Upon graduating from the BSME program at Oregon Tech, students should possess:

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. an ability to communicate effectively with a range of audiences.
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

4. Curriculum Map

The mapping of the PLSO to the course curriculum are shown below. The BSME PLSO's are closely aligned with the Oregon Tech ESLO's, and are mapped approximately as shown below for the purpose of identifying which BSME program courses which support the Oregon Tech ESLOs. The BSME Program uses the terminology of "Introduced", "Reinforced", and "Emphasized"; which corresponds to the Oregon Tech terms of "Foundation", "Practice", and "Capstone" respectively.

BSME PLSO	Oregon Tech ESLO
1. An ability to solve problems	Quantitative Literacy and Reasoning
2. An ability to apply designs	Diverse Perspectives
3. Communication	Communications
4. Ethics	Ethics and Reasoning
5. Teamwork	Teamwork
6. Experimentation	--
7. Apply Knowledge	Inquiry and Analysis

Table 4 BSME Program PLSO to ELSO Course Outcome Mapping

MMET - Mechanical Engineering - SLO-Curriculum Map

EAC SLO 1: An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

I = Introduced R = Reinforced E = Emphasized

	Freshman		Sophomore		Junior		Senior	
Fall	MATH if needed	Algebra/ Trig.	MATH 252	Integral Calc	MATH 341	Linear Algebra	ENGR 491	MMET Sen Proj I
	ENGR 111	Orient I	MECH 260	Engr Materials I	MECH 318	Fluid Mechanics	MECH 323	Heat Transfer I
	WRI 121	Eng Comp	MET 242	CAD II	MECH 363	Engr Instrument	MECH 351	Fin Elem Anal
	CHE 201	Gen. Chem I	PHY 221	Gen Phy I w/calculus	MET 375	Solid Modeling	MECH Elective	Engr/Mech 407 / other
	CHE 204	Chem Lab I	WRI 122 /227	Arg or Tech Report Wri	MATH Statistics	Statistics Requiremnt	Fluid Mech II	Fluids II
	Hum or Soc Sci	Elective					WRI 327	Adv Tech Wr
Win	MATH if needed	Algebra/ Trig.	ENGR 211	Engr Mech Statics	ENGR 212	Engr Mech Dynamics	ENGR 492	MMET Sen Proj II
	CHE 202	Gen Chem II	Math 254	Vector Calc I	ENGR 355	Thermo – Dynamics I	MECH 437	Heat Transfer II
	CHE 205	Chem Lab	MFG 314	Geom Dim & Tolerance	MECH 315	Machine Design I	MECH 480	Mechanical Vibrations
	MFG 103	Intro Welding	PHY 222	Gen Phy II w/calculus	ENGR 326	Elec Pwr Systems	PHIL 331	Ethics in Professions
	SPE 111	Public Speaking			MECH 360	Engr Materials II	MECH Elective	Engr/Mech 407 / other
	Hum or Soc Sci	Elective			SPE 321	Small Grp/ Team Comm		
Spr	MATH 251	Diff Calc	ENGR 213	Engr Mech Strengths	MATH 451	Numerical Mthds I	ENGR 493	MMET Sen Proj III
	MFG 120	Machine Process	ENGR 236	Fund of Elect Circuits	MECH 313	Thermo – Dynamics II	MECH 436	Class Ctrl Systems
	MET 241	CAD I	ENGR 266	Engr Computation	MECH 316	Machine Design II	MECH Elective	Engr/Mech 407 / other
	ECON 201/201	Econ Elective	MATH 321	Appl. Diff. Equations	MECH Elective	Engr/Mech 407 / other	MGT 345	Engr Economy
			PHY 223	Gen Phy III w/calculus	HUM 125	Intro Tech, Soc, Value	Hum or Soc Sci	Elective

MMET - Mechanical Engineering - SLO-Curriculum Map

EAC SLO 2: An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

I = Introduced R = Reinforced E = Emphasized

	Freshman		Sophomore		Junior		Senior	
Fall	MATH if needed	Algebra/ Trig.	MATH 252	Integral Calc	MATH 341	Linear Algebra	ENGR 491	MMET Sen Proj I
	ENGR 111	Orient I	MECH 260	Engr Materials I	MECH 318	Fluid Mechanics	MECH 323	Heat Transfer I
	WRI 121	Eng Comp	MET 242	CAD II	MECH 363	Engr Instrument	MECH 351	Fin Elem Anal
	CHE 201	Gen. Chem I	PHY 221	Gen Phy I w/calculus	MET 375	Solid Modeling	MECH Elective	Engr/Mech 407 / other
	CHE 204	Chem Lab I	WRI 122 /227	Arg or Tech Report Wri	MATH Statistics	Statistics Requiremnt	Fluid Mech II	Fluids II
	Hum or Soc Sci	Elective					WRI 327	Adv Tech Wr
Win	MATH if needed	Algebra/ Trig.	ENGR 211	Engr Mech Statics	ENGR 212	Engr Mech Dynamics	ENGR 492	MMET Sen Proj II
	CHE 202	Gen Chem II	Math 254	Vector Calc I	ENGR 355	Thermo – Dynamics I	MECH 437	Heat Transfer II
	CHE 205	Chem Lab	MFG 314	Geom Dim & Tolerance	MECH 315	Machine Design I	MECH 480	Mechanical Vibrations
	MFG 103	Intro Welding	PHY 222	Gen Phy II w/calculus	ENGR 326	Elec Pwr Systems	PHIL 331	Ethics in Professions
	SPE 111	Public Speaking			MECH 360	Engr Materials II	MECH Elective	Engr/Mech 407 / other
	Hum or Soc Sci	Elective			SPE 321	Small Grp/ Team Comm		
Spr	MATH 251	Diff Calc	ENGR 213	Engr Mech Strengths	MATH 451	Numerical Mthds I	ENGR 493	MMET Sen Proj III
	MFG 120	Machine Process	ENGR 236	Fund of Elect Circuits	MECH 313	Thermo – Dynamics II	MECH 436	Class Ctrl Systems
	MET 241	CAD I	ENGR 266	Engr Computation	MECH 316	Machine Design II	MECH Elective	Engr/Mech 407 / other
	ECON 201/201	Econ Elective	MATH 321	Appl. Diff. Equations	MECH Elective	Engr/Mech 407 / other	MGT 345	Engr Economy
			PHY 223	Gen Phy III w/calculus	HUM 125	Intro Tech, Soc, Value	Hum or Soc Sci	Elective

MMET - Mechanical Engineering - SLO-Curriculum Map

EAC SLO 3 An ability to communicate effectively with a range of audiences

I = Introduced R = Reinforced E = Emphasized

	Freshman		Sophomore		Junior		Senior	
Fall	MATH if needed	Algebra/ Trig.	MATH 252	Integral Calc	MATH 341	Linear Algebra	ENGR 491	MMET Sen Proj I
	ENGR 111	Orient I	MECH 260	Engr Materials I	MECH 318	Fluid Mechanics	MECH 323	Heat Transfer I
	WRI 121	Eng Comp	MET 242	CAD II	MECH 363	Engr Instrument	MECH 351	Fin Elem Anal
	CHE 201	Gen. Chem I	PHY 221	Gen Phy I w/calculus	MET 375	Solid Modeling	MECH Elective	Engr/Mech 407 / other
	CHE 204	Chem Lab I	WRI 122 /227	Arg or Tech Report Wri	MATH Statistics	Statistics Requiremnt	Fluid Mech II	Fluids II
	Hum or Soc Sci	Elective					WRI 327	Adv Tech Wr
Win	MATH if needed	Algebra/ Trig.	ENGR 211	Engr Mech Statics	ENGR 212	Engr Mech Dynamics	ENGR 492	MMET Sen Proj II
	CHE 202	Gen Chem II	Math 254	Vector Calc I	ENGR 355	Thermo – Dynamics I	MECH 437	Heat Transfer II
	CHE 205	Chem Lab	MFG 314	Geom Dim & Tolerance	MECH 315	Machine Design I	MECH 480	Mechanical Vibrations
	MFG 103	Intro Welding	PHY 222	Gen Phy II w/calculus	ENGR 326	Elec Pwr Systems	PHIL 331	Ethics in Professions
	SPE 111	Public Speaking			MECH 360	Engr Materials II	MECH Elective	Engr/Mech 407 / other
	Hum or Soc Sci	Elective			SPE 321	Small Grp/ Team Comm		
Spr	MATH 251	Diff Calc	ENGR 213	Engr Mech Strengths	MATH 451	Numerical Mthds I	ENGR 493	MMET Sen Proj III
	MFG 120	Machine Process	ENGR 236	Fund of Elect Circuits	MECH 313	Thermo – Dynamics II	MECH 436	Class Ctrl Systems
	MET 241	CAD I	ENGR 266	Engr Computation	MECH 316	Machine Design II	MECH Elective	Engr/Mech 407 / other
	ECON 201/201	Econ Elective	MATH 321	Appl. Diff. Equations	MECH Elective	Engr/Mech 407 / other	MGT 345	Engr Economy
			PHY 223	Gen Phy III w/calculus	HUM 125	Intro Tech, Soc, Value	Hum or Soc Sci	Elective

MMET - Mechanical Engineering - SLO-Curriculum Map

EAC SLO 4: An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

I = Introduced R = Reinforced E = Emphasized

	Freshman		Sophomore		Junior		Senior	
Fall	MATH if needed	Algebra/ Trig.	MATH 252	Integral Calc	MATH 341	Linear Algebra	ENGR 491	MMET Sen Proj I
	ENGR 111	Orient I	MECH 260	Engr Materials I	MECH 318	Fluid Mechanics	MECH 323	Heat Transfer I
	WRI 121	Eng Comp	MET 242	CAD II	MECH 363	Engr Instrument	MECH 351	Fin Elem Anal
	CHE 201	Gen. Chem I	PHY 221	Gen Phy I w/calculus	MET 375	Solid Modeling	MECH Elective	Engr/Mech 407 / other
	CHE 204	Chem Lab I	WRI 122 /227	Arg or Tech Report Wri	MATH Statistics	Statistics Requiremnt	Fluid Mech II	Fluids II
	Hum or Soc Sci	Elective					WRI 327	Adv Tech Wr
Win	MATH if needed	Algebra/ Trig.	ENGR 211	Engr Mech Statics	ENGR 212	Engr Mech Dynamics	ENGR 492	MMET Sen Proj II
	CHE 202	Gen Chem II	Math 254	Vector Calc I	ENGR 355	Thermo – Dynamics I	MECH 437	Heat Transfer II
	CHE 205	Chem Lab	MFG 314	Geom Dim & Tolerance	MECH 315	Machine Design I	MECH 480	Mechanical Vibrations
	MFG 103	Intro Welding	PHY 222	Gen Phy II w/calculus	ENGR 326	Elec Pwr Systems	PHIL 331	Ethics in Professions
	SPE 111	Public Speaking			MECH 360	Engr Materials II	MECH Elective	Engr/Mech 407 / other
	Hum or Soc Sci	Elective			SPE 321	Small Grp/ Team Comm		
Spr	MATH 251	Diff Calc	ENGR 213	Engr Mech Strengths	MATH 451	Numerical Mthds I	ENGR 493	MMET Sen Proj III
	MFG 120	Machine Process	ENGR 236	Fund of Elect Circuits	MECH 313	Thermo – Dynamics II	MECH 436	Class Ctrl Systems
	MET 241	CAD I	ENGR 266	Engr Computation	MECH 316	Machine Design II	MECH Elective	Engr/Mech 407 / other
	ECON 201/201	Econ Elective	MATH 321	Appl. Diff. Equations	MECH Elective	Engr/Mech 407 / other	MGT 345	Engr Economy
			PHY 223	Gen Phy III w/calculus	HUM 125	Intro Tech, Soc, Value	Hum or Soc Sci	Elective

MMET - Mechanical Engineering - SLO-Curriculum Map

EAC SLO 5: An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

I = Introduced R = Reinforced E = Emphasized

	Freshman		Sophomore		Junior		Senior	
Fall	MATH if needed	Algebra/ Trig.	MATH 252	Integral Calc	MATH 341	Linear Algebra	ENGR 491	MMET Sen Proj I
	ENGR 111	Orient I	MECH 260	Engr Materials I	MECH 318	Fluid Mechanics	MECH 323	Heat Transfer I
	WRI 121	Eng Comp	MET 242	CAD II	MECH 363	Engr Instrument	MECH 351	Fin Elem Anal
	CHE 201	Gen. Chem I	PHY 221	Gen Phy I w/calculus	MET 375	Solid Modeling	MECH Elective	Engr/Mech 407 / other
	CHE 204	Chem Lab I	WRI 122 /227	Arg or Tech Report Wri	MATH Statistics	Statistics Requiremnt	Fluid Mech II	Fluids II
	Hum or Soc Sci	Elective					WRI 327	Adv Tech Wr
Win	MATH if needed	Algebra/ Trig.	ENGR 211	Engr Mech Statics	ENGR 212	Engr Mech Dynamics	ENGR 492	MMET Sen Proj II
	CHE 202	Gen Chem II	Math 254	Vector Calc I	ENGR 355	Thermo – Dynamics I	MECH 437	Heat Transfer II
	CHE 205	Chem Lab	MFG 314	Geom Dim & Tolerance	MECH 315	Machine Design I	MECH 480	Mechanical Vibrations
	MFG 103	Intro Welding	PHY 222	Gen Phy II w/calculus	ENGR 326	Elec Pwr Systems	PHIL 331	Ethics in Professions
	SPE 111	Public Speaking			MECH 360	Engr Materials II	MECH Elective	Engr/Mech 407 / other
	Hum or Soc Sci	Elective			SPE 321	Small Grp/ Team Comm		
Spr	MATH 251	Diff Calc	ENGR 213	Engr Mech Strengths	MATH 451	Numerical Mthds I	ENGR 493	MMET Sen Proj III
	MFG 120	Machine Process	ENGR 236	Fund of Elect Circuits	MECH 313	Thermo – Dynamics II	MECH 436	Class Ctrl Systems
	MET 241	CAD I	ENGR 266	Engr Computation	MECH 316	Machine Design II	MECH Elective	Engr/Mech 407 / other
	ECON 201/201	Econ Elective	MATH 321	Appl. Diff. Equations	MECH Elective	Engr/Mech 407 / other	MGT 345	Engr Economy
			PHY 223	Gen Phy III w/calculus	HUM 125	Intro Tech, Soc, Value	Hum or Soc Sci	Elective

MMET - Mechanical Engineering - SLO-Curriculum Map

EAC SLO 6: An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

I = Introduced R = Reinforced E = Emphasized

	Freshman		Sophomore		Junior		Senior	
Fall	MATH if needed	Algebra/ Trig.	MATH 252	Integral Calc	MATH 341	Linear Algebra	ENGR 491	MMET Sen Proj I
	ENGR 111	Orient I	MECH 260	Engr Materials I	MECH 318	Fluid Mechanics	MECH 323	Heat Transfer I
	WRI 121	Eng Comp	MET 242	CAD II	MECH 363	Engr Instrument	MECH 351	Fin Elem Anal
	CHE 201	Gen. Chem I	PHY 221	Gen Phy I w/calculus	MET 375	Solid Modeling	MECH Elective	Engr/Mech 407 / other
	CHE 204	Chem Lab I	WRI 122 /227	Arg or Tech Report Wri	MATH Statistics	Statistics Requiremnt	Fluid Mech II	Fluids II
	Hum or Soc Sci	Elective					WRI 327	Adv Tech Wr
Win	MATH if needed	Algebra/ Trig.	ENGR 211	Engr Mech Statics	ENGR 212	Engr Mech Dynamics	ENGR 492	MMET Sen Proj II
	CHE 202	Gen Chem II	Math 254	Vector Calc I	ENGR 355	Thermo – Dynamics I	MECH 437	Heat Transfer II
	CHE 205	Chem Lab	MFG 314	Geom Dim & Tolerance	MECH 315	Machine Design I	MECH 480	Mechanical Vibrations
	MFG 103	Intro Welding	PHY 222	Gen Phy II w/calculus	ENGR 326	Elec Pwr Systems	PHIL 331	Ethics in Professions
	SPE 111	Public Speaking			MECH 360	Engr Materials II	MECH Elective	Engr/Mech 407 / other
	Hum or Soc Sci	Elective			SPE 321	Small Grp/ Team Comm		
Spr	MATH 251	Diff Calc	ENGR 213	Engr Mech Strengths	MATH 451	Numerical Mthds I	ENGR 493	MMET Sen Proj III
	MFG 120	Machine Process	ENGR 236	Fund of Elect Circuits	MECH 313	Thermo – Dynamics II	MECH 436	Class Ctrl Systems
	MET 241	CAD I	ENGR 266	Engr Computation	MECH 316	Machine Design II	MECH Elective	Engr/Mech 407 / other
	ECON 201/201	Econ Elective	MATH 321	Appl. Diff. Equations	MECH Elective	Engr/Mech 407 / other	MGT 345	Engr Economy
			PHY 223	Gen Phy III w/calculus	HUM 125	Intro Tech, Soc, Value	Hum or Soc Sci	Elective

MMET - Mechanical Engineering - SLO-Curriculum Map

EAC SLO 7: An ability to acquire and apply new knowledge as needed, using appropriate learning strategies

I = Introduced R = Reinforced E = Emphasized

	Freshman		Sophomore		Junior		Senior	
Fall	MATH if needed	Algebra/ Trig.	MATH 252	Integral Calc	MATH 341	Linear Algebra	ENGR 491	MMET Sen Proj I
	ENGR 111	Orient I	MECH 260	Engr Materials I	MECH 318	Fluid Mechanics	MECH 323	Heat Transfer I
	WRI 121	Eng Comp	MET 242	CAD II	MECH 363	Engr Instrument	MECH 351	Fin Elem Anal
	CHE 201	Gen. Chem I	PHY 221	Gen Phy I w/calculus	MET 375	Solid Modeling	MECH Elective	Engr/Mech 407 / other
	CHE 204	Chem Lab I	WRI 122 /227	Arg or Tech Report Wri	MATH Statistics	Statistics Requiremnt	Fluid Mech II	Fluids II
	Hum or Soc Sci	Elective					WRI 327	Adv Tech Wr
Win	MATH if needed	Algebra/ Trig.	ENGR 211	Engr Mech Statics	ENGR 212	Engr Mech Dynamics	ENGR 492	MMET Sen Proj II
	CHE 202	Gen Chem II	Math 254	Vector Calc I	ENGR 355	Thermo – Dynamics I	MECH 437	Heat Transfer II
	CHE 205	Chem Lab	MFG 314	Geom Dim & Tolerance	MECH 315	Machine Design I	MECH 480	Mechanical Vibrations
	MFG 103	Intro Welding	PHY 222	Gen Phy II w/calculus	ENGR 326	Elec Pwr Systems	PHIL 331	Ethics in Professions
	SPE 111	Public Speaking			MECH 360	Engr Materials II	MECH Elective	Engr/Mech 407 / other
	Hum or Soc Sci	Elective			SPE 321	Small Grp/ Team Comm		
Spr	MATH 251	Diff Calc	ENGR 213	Engr Mech Strengths	MATH 451	Numerical Mthds I	ENGR 493	MMET Sen Proj III
	MFG 120	Machine Process	ENGR 236	Fund of Elect Circuits	MECH 313	Thermo – Dynamics II	MECH 436	Class Ctrl Systems
	MET 241	CAD I	ENGR 266	Engr Computation	MECH 316	Machine Design II	MECH Elective	Engr/Mech 407 / other
	ECON 201/201	Econ Elective	MATH 321	Appl. Diff. Equations	MECH Elective	Engr/Mech 407 / other	MGT 345	Engr Economy
			PHY 223	Gen Phy III w/calculus	HUM 125	Intro Tech, Soc, Value	Hum or Soc Sci	Elective

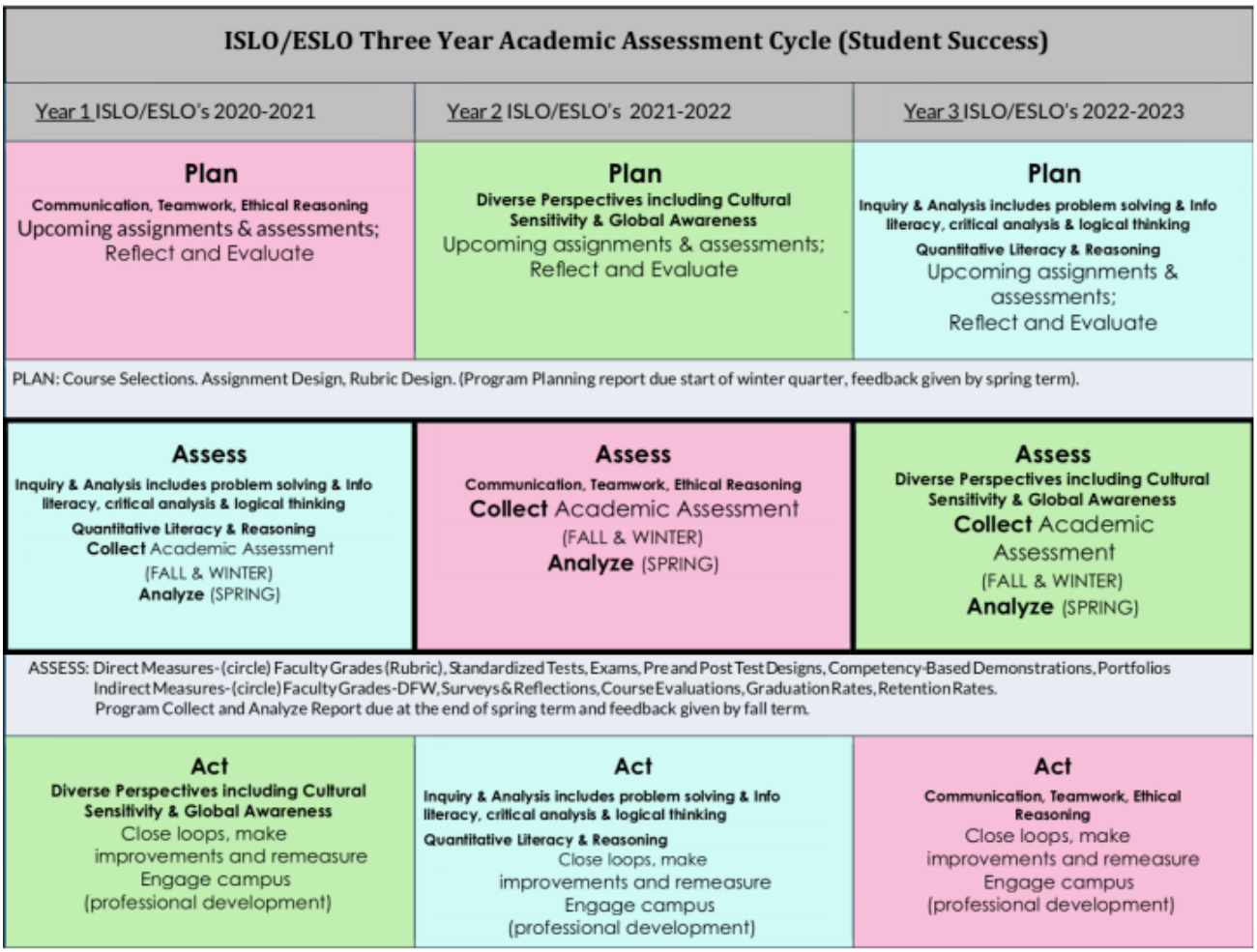
5. Three-Year Cycle for Assessment of Student Learning Outcomes

The BSME program is using a three-year assessment cycle for its SLOs, with the assessment cycle being the same for all three campuses (Table 2). The 2021/22 academic year is the last year of this cycle, and the 2021/22 assessment items will be the same as those for 2018/19.

Assessment Criteria	19/20	20/21	21/22
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.		✓	
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.		✓	
3. an ability to communicate effectively with a range of audiences.	✓		
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.			✓
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.			✓
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	✓		
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	✓		

Table 5: Three-year PLSO assessment cycle timetable

The Oregon Tech ISLO three year Academic Assessment Cycle is shown below.



ISLO/ESLO Three Year Academic Assessment Cycle (Student Success)		
Year 1 ISLO/ESLO's 2020-2021	Year 2 ISLO/ESLO's 2021-2022	Year 3 ISLO/ESLO's 2022-2023
Plan **Communication, Teamwork, Ethical Reasoning** Upcoming assignments & assessments; Reflect and Evaluate	**Plan** **Diverse Perspectives including Cultural Sensitivity & Global Awareness** Upcoming assignments & assessments; Reflect and Evaluate	**Plan** **Inquiry & Analysis includes problem solving & Info literacy, critical analysis & logical thinking** **Quantitative Literacy & Reasoning** Upcoming assignments & assessments; Reflect and Evaluate
PLAN: Course Selections. Assignment Design, Rubric Design. (Program Planning report due start of winter quarter, feedback given by spring term).		
Assess **Inquiry & Analysis includes problem solving & Info literacy, critical analysis & logical thinking** **Quantitative Literacy & Reasoning** **Collect** Academic Assessment (FALL & WINTER) **Analyze** (SPRING)	**Assess** **Communication, Teamwork, Ethical Reasoning** **Collect** Academic Assessment (FALL & WINTER) **Analyze** (SPRING)	**Assess** **Diverse Perspectives including Cultural Sensitivity & Global Awareness** **Collect** Academic Assessment (FALL & WINTER) **Analyze** (SPRING)
ASSESS: Direct Measures-(circle) Faculty Grades (Rubric), Standardized Tests, Exams, Pre and Post Test Designs, Competency-Based Demonstrations, Portfolios Indirect Measures-(circle) Faculty Grades-DFW, Surveys & Reflections, Course Evaluations, Graduation Rates, Retention Rates. Program Collect and Analyze Report due at the end of spring term and feedback given by fall term.		
Act **Diverse Perspectives including Cultural Sensitivity & Global Awareness** Close loops, make improvements and remeasure Engage campus (professional development)	**Act** **Inquiry & Analysis includes problem solving & Info literacy, critical analysis & logical thinking** **Quantitative Literacy & Reasoning** Close loops, make improvements and remeasure Engage campus (professional development)	**Act** **Communication, Teamwork, Ethical Reasoning** Close loops, make improvements and remeasure Engage campus (professional development)

Table 6 Oregon Tech ISLO 3-Year Cycle

6. Assessment Activities Undertaken 2021/22

The MMET department schedule called for the assessing of two PSLOs (#4 Ethics and #5 Teamwork) during the 2021-2022 academic year, and three ISLO's (ISLO #3 Ethics; ISLO #4 Teamwork; and ISLO #1 Communications). The two PSLO's are the same learning outcomes as the first two ISLO's (Ethics; Teamwork); and will have be covered with the same assessments. The third ISLO (Communications) will have its own assessment material. It is recommended that the BSME PLSO Cycle be aligned with the Universities' ISLO's cycle in the near future.

The results for these assessments for the three campuses are shown below. The MMET Assessment Plan calls for 2 direct assessments, and one indirect assessment for each outcome. The two direct assessments should be done for each outcome at each of the three campuses where the BSME degree is offered.

This indirect assessment was done via an "Exit Survey" sent out by the Office of Assessment, and is based on the University-side ISLOs. Data for this survey was not broken down by campus, so the indirect assessments are shown for the BSME Program as a whole. It is recommended that in the future the indirect assessment data should be separated by campus.

A total of 30 students gave responses to this survey. The BSME Program's goal is to have 80% of our students score at a 3 or 4 level on a 1-4 scale.

The Assessment material is shown below, starting with the common PLSOs/ISLOs.

PSLO #4 ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

ISLO #3 ESLO 3. Ethical Reasoning: Making ethical judgements

Indirect Assessment (combined all campuses):

The exit survey showed that out of the 29 responses, the students rated themselves as follows on a 1-4 scale (with 1 being the lowest and 4 the highest), see Table 7 below:

BSME PSLO #4/ISLO #3	Number of Students	%
1	1	3.33%
2	0	0.00%
3	9	30.00%
4	20	66.67%
Total	30	100%

Table 7 PSLO #4 and ISLO #3 Indirect Assessment Results

There were 29 students scoring at a 3 or 4 level; which is 96.67%. This is above the 80% level set by the BSME Program, and indicates that from a student's perspective there is no action required at this point of time.

Direct Assessments

The Performance Criteria to consider in assessing this outcome are:

- Demonstrates knowledge of the professional code of ethics and can use it to describe ethical issues. Demonstrates knowledge and understanding of "ethical diversity".
- Understands the global impact of engineering decisions
- Understands the macro-economic impact of engineering solutions
- Understands major socio-economic and political issues of engineering

solutions
- Understands the environmental and the social impact of engineering decisions
- Describes and analyzes possible/alternative approaches and can explain the benefits and risks

The direct assessments for this outcome are shown in Appendix 1.

Summary Comments for PSLO #4/ISLO #3 "Ethics":

Students appeared to have the ability to recognize different learning strategies and utilized them to successfully complete this project. They also appear to have understanding that the technology and choices made in the report are reflective of their current knowledge and understanding, and that these may need to be modified in the future (lifelong learning).

Understanding the macroeconomics of engineering solutions is somewhat beyond most students in this course.

Comments from this assessment activity include mention of the fact that students successfully identified stakeholders, alternative resolution scenarios, ethical/moral principles, and assessment via an evaluation/decision matrix.

PSLO #5 an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

ISLO #4. Teamwork: Work effectively with groups and teams.

Indirect Assessment (combined all campuses):

The exit survey showed that out of the 30 responses, the students rated themselves as follows on a 1-4 scale (with 1 being the lowest and 4 the highest), shown in Table 8 below:

BSME PSLO #5 and ISLO #4	Number of Students	%
1	1	3.33%
2	1	3.33%
3	6	20.00%
4	22	73.33%
Total	30	100%

Table 8 PSLO #5 and ISLO #4 Indirect Assessment Results

There were 28 students scoring at a 3 or 4 level; which is 93.3%. This is above the 80% level set by the BSME Program, and indicates that from a student's perspective there is no action required at this point of time.

Direct Assessments

The Performance Criteria to consider in assessing this outcome are:

- Identifies and achieves goal/purpose
- Assumes and fulfills roles and responsibilities as appropriate. Leadership strives to create a collaborative and inclusive environment.
- Interacts and communicates effectively with team/group members.
- Reconcile disagreement
- Share appropriately
- Develop strategies for effective action
- Documentation and record keeping
- Cultural adaptation

The direct assessments for this outcome are shown in Appendix 2.

Summary Comments for PSLO #5/ISLO #4 ("Teamwork"):

Delivery and sharing of data could have been improved. Some students fell short of including a supplementary information that would be useful to facilitate better teamwork/communication.

Although students commented on a lack of teamwork and group communication, they rated their team members as proficient or highly proficient in communication. This same comment was made by other faculty doing the teamwork assessment.

Not a lot of weaknesses or concerns identified by faculty

ISLO #1a. Communication: Writing effectively

And

ESLO 1b. Communication: Speaking effectively

Combined results for ISLO 1 (1a Written, and 1b Speaking) are shown below.

Indirect Assessments:

The exit survey showed that out of the 30 responses, the students rated themselves as follows on a 1-4 scale (with 1 being the lowest and 4 the highest), shown in Table 9 below:

ISLO #1a	Number of Students	%
1	0	0.00%
2	2	6.67%
3	10	33.33%
4	18	60.00%
Total	30	100%

Table 9 ISLO #1a (Written Communications) Indirect Assessment Results

There were 28 students scoring at a 3 or 4 level for Written Communications; which is 93.3%. This is above the 80% level set by the BSME Program, and indicates that from a student's perspective there is no action required at this point of time.

The exit survey showed that out of the 30 responses, the students rated themselves as follows on a 1-4 scale (with 1 being the lowest and 4 the highest), shown in Table 10 below:

ISLO #1b	Number of Students	%
1	0	0.00%
2	0	0.00%
3	13	43.33%
4	17	56.67%
Total	30	100%

Table 10 ISLO #1b (Speaking Communications) Indirect Assessment Results

There were 30 students scoring at a 3 or 4 level for Speaking Communications; which is 100%. This is above the 80% level set by the BSME Program, and indicates that from a student's perspective there is no action required at this point of time.

Direct Assessments

The Performance Criteria to consider in assessing this outcome are:

- Purpose and Audience
- Focus and Organization
- Support and Documentation
- Style and Conventions
- Visual Communication (where appropriate)
- Justification (Self- Assessment)

The direct assessments for this outcome are shown in Appendix 3.

Summary Comments for ISLO #1 ("Communications"):

The students need to work on their support material, specifically their references

Students are still not demonstrating a high level of ability to conduct and organize research effectively despite being reasonable far through their degrees. It is possible that more focus may need to be placed on previous courses to ensure that students are able to better articulate the reasons for their decisions and solutions.

Students appear to struggle to use appropriate technical literature to support their arguments.

Students did not completely understand expectations, and some did better than others.

7. Data-driven Action Plans: Changes Resulting from Assessment

No changes resulting from assessment were made during the 2021 – 2022 Academic year.

8. Closing the Loop: Evidence of Improvement in Student Learning

No closing the loop activities were performed during the 2021 – 2022 Academic year.

Appendix 1 Direct Assessment PLSO #4/ ISLO #3 ("Ethics")

PLSO 4; an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Klamath Falls Assessment, 2021 – 2022 Academic year.
Direct Assessment #1 Klamath Campus

The faculty assessed this outcome in ENGR 355 Fall term 2021, using a report. Student were asked to write a 2-3 page report on the global, economic, environmental and social impacts of the use of CFCs. There were a total of 5 students in the class (4 mechanical engineering, and 1 manufacturing engineering technology). Only the mechanical engineering students were considered in this assessment and the results are show in table 1.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
4a) Demonstrates knowledge of the professional code of ethics and can use it to describe ethical issues. Demonstrates knowledge and understanding of "ethical diversity".	Report	1-4 proficiency scale	80% score 3 or 4	75%
4b) Understands the global impact of engineering decisions	Report	1-4 proficiency scale	80% score 3 or 4	100%
4c) Understands the macro-economic impact of engineering solutions	Report	1-4 proficiency scale	80% score 3 or 4	100%
4d) Understands major socio-economic and political issues of engineering solutions	Report	1-4 proficiency scale	80% score 3 or 4	N/A
4e) Understands the environmental and the social impact of engineering decisions	Report	1-4 proficiency scale	80% score 3 or 4	100%
4f) Describes and analyzes possible/alternative approaches and can explain the benefits and risks	Report	1-4 proficiency scale	80% score 3 or 4	N/A

Table 1. ME Assessment Results for SLO 4, Fall 2021, Klamath Falls Campus

Strengths: Students generally recognized all the impacts and discussed them appropriately.
Weaknesses: None indicated by the results or instructor feedback

Actions: None proposed.

Portland Metro Assessment, 2021 – 2022 Academic year.
Direct Assessment #1 Portland Metro Campus

The faculty assessed this outcome in ENGR 111 Fall term 2021, using a quiz based on the NPSE code of ethics and scored with a rubric. There were a total of 16 students in the class (11 mechanical engineering, 3 manufacturing engineering technology, and 2 mechanical engineering technology). Only the mechanical engineering students were considered in this assessment and the results are show in table 2

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
4a) Demonstrates knowledge of the professional code of ethics and can use it to describe ethical issues. Demonstrates knowledge and understanding of "ethical diversity".	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	81%
4b) Understands the global impact of engineering decisions	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	75%
4c) Understands the macro-economic impact of engineering solutions	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	63%
4d) Understands major socio-economic and political issues of engineering solutions	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	75%
4e) Understands the environmental and the social impact of engineering decisions	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	81%
4f) Describes and analyzes possible/alternative approaches and can explain the benefits and risks	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	81%

Table 2. ME Assessment Results for SLO 4, Fall 2021, Portland Metro Campus

Strengths: Professional Code of ethics was well understood, and students found it interesting and engaging.
Weaknesses: Understanding the macroeconomics of engineering solutions is somewhat beyond most students in this course.
Actions: Provide more research and reading material regarding professional ethics in the field.

Seattle Assessment, 2021 – 2022 Academic year.

Direct Assessment #1 Seattle Campus

The faculty assessed this outcome in ENGR 355 Fall term 2021, using a report. Student were asked to write a 2-3 page report on the global, economic, environmental and social impacts of the use of CFCs. There were a total of 5 students in the class (4 mechanical engineering, and 1 manufacturing engineering technology). Only the mechanical engineering students were considered in this assessment and the results are show in table 3.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
4a) Demonstrates knowledge of the professional code of ethics and can use it to describe ethical issues. Demonstrates knowledge and understanding of "ethical diversity".	Report	1-4 proficiency scale	80% score 3 or 4	80%
4b) Understands the global impact of engineering decisions	Report	1-4 proficiency scale	80% score 3 or 4	100%
4c) Understands the macro-economic impact of engineering solutions	Report	1-4 proficiency scale	80% score 3 or 4	100%
4d) Understands major socio-economic and political issues of engineering solutions	Report	1-4 proficiency scale	80% score 3 or 4	N/A
4e) Understands the environmental and the social impact of engineering decisions	Report	1-4 proficiency scale	80% score 3 or 4	100%
4f) Describes and analyzes possible/alternative approaches and can explain the benefits and risks	Report	1-4 proficiency scale	80% score 3 or 4	N/A

Table 3. ME Assessment Results for SLO 4, Fall 2021, Seattle Campus

Strengths: Students generally recognized all the impacts and discussed them appropriately.
Weaknesses: None indicated by the results or instructor feedback
Actions: None proposed.

A Qualtrics Survey was developed to standardize and simplify the collection of data for the Ethics outcome at the three campuses (KF, PM, SEA). This survey consisted of 10 questions

taken from sample FE exams. The data shows that students need more practice analyzing scenarios related to engineering ethics and situations that they may face as professional engineers. There were 17 students from mechanical engineering at Klamath Falls, 13 from Portland Metro and only 4 from Seattle. This is the first time that a survey/FE questions were used to collect data and the results will be reviewed by faculty in Fall, 2022 to see how the assessment can be improved. The questions (with correct answer in bold face) as well as a summary of the results are shown here:

Assessment Method: Qualtrics Survey Multiple Choice Questions Measurement scale (available choices) and **correct answer.**

Q1 - Ethics Q1) "Ethics" is best defined as .... I. a philosophical concept dealing with moral con-duct. II a set of standards establishing right and wrong actions. III. rules that describe your duty to society and fellow professionals**.** IV. guidelines that help you make decisions. **All of the above**

Q2 - Ethics Q2) What is the direct result of ethical behavior? I. Your reputation will be enhanced. II You will be rewarded economically. III. you will feel good about yourself. **None of the above**

Q3 - Ethics Q3) Ethical behavior is invariant (does not change) with respect to ..... I. time. II location. III. culture. **None of the above**

Q4 - Ethics Q4) Complete the sentence: "State registration boards, boards of ethical review, oversight committees, and in-ternal audit departments are used in industry and gov-ernment because .... I. illegal and unethical actions must be punished." II. people must be shown that the rules will be enforced." III. there is something to be learned from all errors in judgment." **All of the above**

Q5 - Ethics Q5) Complete the sentence: "If you check the calculations for a licensed (registered) friend who has gone into a consulting engineering business for himself/ herself, **your friend& client should be told of your involvement.**

Q6 - Ethics Q6) Which of the following can override your ethical require-ment to perform a thorough analysis and check of the work for an individual client? **Other ethical obligations to society as a whole.**

Q7 - Ethics Q7) Which of the following principles is not embodied in codes of ethics for engineering consultants? I. Consulting engineers will place service to hu-mankind above personal gain. II. Consulting engineers will serve clients faith- fully, honestly, and professionally. III. Consulting engineers will be fair and will act with integrity and courtesy. IV. Consulting engineers will encourage the devel-opment of the engineering and consulting pro-fession. **None of the above**

Q8 - Ethics Q8) While supervising a construction project in a developing country, an engineer discovers that his client's project manager is treating laborers in an unsafe and inhumane (but for that country, legal) manner. When he protests, the engineer is told by company executives that the company has no choice in the matter if it wishes to remain competitive in the region, and he should just accept this as the way things are. What would ethics require the engineer to do**? Withdraw from the project, returning any fees he may have received.**

Q9 - Ethics Q9) An engineering professor with a professional engineer-ing license and 20 years of experience in engineering education is asked to consult on a building design. Can the professor accept this request? **Yes, but she should review and comment on only those portions of the project in which she is qualified by education and experience.**

Q10 - Ethics Q10) A local engineering professor acts as technical advisor for the city council in a town. A few weeks before the council is scheduled to award a large construction con- tract, the professor is

approached by one of the compet-ing companies and offered a consulting position. Under what circumstances would it be ethical to accept the job? **The professor must not participate in any discussions concerning the project for which the company is competing.**

Performance Criteria 4) Demonstrates knowledge of typical ethics related scenarios related to engineering professionals. Questions taken from sample FE exams.	**% Results (KF); Out of 17 students**	**% Results (PM); out of 13 students**	**% Results (SEA); out of 4 students**
Q1- Definition of Ethics	47.06%	87.50%	100%
Q2- Ethical Behavior Definition	52.94%	62.50%	0.00%
Q3- Ethical Behavior Invariant	52.94%	50%	0.00%
Q4- Ethical Review Oversight	52.94%	62.50%	66.67%
Q5- Ethical Responsibility	35.29%	37.50%	66.67%
Q6- Ethical Overrides	47.06%	62.50%	0.00%
Q7- Ethical Principles	58.82%	25.00%	33.33%
Q8- Treatment of Others	41.18%	37.50%	66.67%
Q9- Ethical Consulting	64.71%	50.00%	33.33%
Q10- Ethical Advising	64.71%	87.50%	66.67%

Table 4: ME Assessment Results for SLO 4, Winter 2022 using a Qualtrics Survey

Appendix 2 Direct Assessment PLSO #5/ISLO #4 ("Teamwork")

PLSO 5; An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

Klamath Falls Assessment, 2021 – 2022 Academic year.
Direct Assessment #1 Klamath Campus

The faculty assessed this outcome in MECH 360 Fall term 2021, using a Homework Assn. There were a total of 20 students in the class (13 mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 1.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
5a) Identifies and achieves goal/purpose	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	80%
5b) Assumes and fulfills roles and responsibilities as appropriate. Leadership	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	90%

strives to create a collaborative and inclusive environment.				
5c) Interacts and communicates effectively with team/group members.	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	85%
5d) Reconcile disagreement	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	85%
5e) Share appropriately	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	80%
5f) Develop strategies for effective action	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	80%
5g) Documentation and record keeping	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	90%
5h) Cultural adaptation	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%

Table 1 ME Assessment Results for SLO 5, Fall 2021, Klamath Falls Campus

Students were able to utilize the information given in different appendices and compile the data to determine the best fiber matrix combination for a composite with required strength and elastic modulus.
Delivery and sharing of data could have been improved. Some students fell short of including a supplementary information that could have been useful to facilitate a better teamwork, and communication style.
Perhaps a predefined format (either from industry practices) or a simplified version of in class activities could be more helpful. Students were able to adapt and utilize a set framework rather than coming up with an innovative idea of their own.

Klamath Falls Assessment, 2021 – 2022 Academic year.
Direct Assessment #2 Klamath Campus

The faculty assessed this outcome in MECH 437 Fall term 2021, using a Heat Sink Design Problem. There were a total of 14 students in the class (all mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 2.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results

5a) Identifies and achieves goal/purpose	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%
5b) Assumes and fulfills roles and responsibilities as appropriate. Leadership strives to create a collaborative and inclusive environment.	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%
5c) Interacts and communicates effectively with team/group members.	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	93%
5d) Reconcile disagreement	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%
5e) Share appropriately	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%
5f) Develop strategies for effective action	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%
5g) Documentation and record keeping	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%
5h) Cultural adaptation	Homework Assignment	1-4 proficiency scale	80% score 3 or 4	100%

Table 2. ME Assessment Results for SLO 5, Fall 2021, Klamath Falls Campus

Students performed exceptionally well, only 1 student scored below 3 on 1 criteria.
No Weaknesses observed.

Portland Metro, 2021 – 2022 Academic year.
Direct Assessment #1 Klamath Campus

The faculty assessed this outcome in MECH 363 Fall term 2021, using a report. There were a total of 16 students in the class (14 mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 3.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
5a) Identifies and achieves goal/purpose	Report	1-4 proficiency scale	80% score 3 or 4	100%

5b) Assumes and fulfills roles and responsibilities as appropriate. Leadership strives to create a collaborative and inclusive environment.	Report	1-4 proficiency scale	80% score 3 or 4	100%
5c) Interacts and communicates effectively with team/group members.	Report	1-4 proficiency scale	80% score 3 or 4	100%
5d) Reconcile disagreement	Report	1-4 proficiency scale	80% score 3 or 4	100%
5e) Share appropriately	Report	1-4 proficiency scale	80% score 3 or 4	100%
5f) Develop strategies for effective action	Report	1-4 proficiency scale	80% score 3 or 4	100%
5g) Documentation and record keeping	Report	1-4 proficiency scale	80% score 3 or 4	100%
5h) Cultural adaptation	Report	1-4 proficiency scale	80% score 3 or 4	100%

Table 3. ME Assessment Results for SLO 5, Fall 2021, Portland Metro Campus

Students researched some very interesting (and technically challenging) topics
The major problem that I heard (anecdotally) was a lack of teamwork and group communication. However, in the end members rated their team members proficient or highly proficient in communication! But I'm not sure why!
Students need more training on how to work effectively, efficiently with other engineers.

Portland Metro, 2021 – 2022 Academic year.
Direct Assessment #1 Klamath Campus

The faculty assessed this outcome in MECH 260 Fall term 2021, using a report. There were a total of 12 students in the class (10 mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 4.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
5a) Identifies and achieves goal/purpose	Report	1-4 proficiency scale	80% score 3 or 4	91.6%

5b) Assumes and fulfills roles and responsibilities as appropriate. Leadership strives to create a collaborative and inclusive environment.	Report	1-4 proficiency scale	80% score 3 or 4	83.3%
5c) Interacts and communicates effectively with team/group members.	Report	1-4 proficiency scale	80% score 3 or 4	91.6%
5d) Reconcile disagreement	Report	1-4 proficiency scale	80% score 3 or 4	91.6%
5e) Share appropriately	Report	1-4 proficiency scale	80% score 3 or 4	83.3%
5f) Develop strategies for effective action	Report	1-4 proficiency scale	80% score 3 or 4	91.6%
5g) Documentation and record keeping	Report	1-4 proficiency scale	80% score 3 or 4	91.6%
5h) Cultural adaptation	Report	1-4 proficiency scale	80% score 3 or 4	91.6%

Table 4. ME Assessment Results for SLO 5, Fall 2021, Portland Metro Campus

Students were able to collaboratively establish goal, plan, and meet objectives
No weaknesses identified

Seattle Assessment, 2021 – 2022 Academic year.
Direct Assessment #1 Seattle Campus

The faculty assessed this outcome in MECH 318 Fall term 2021, using a lab exercise. There were a total of 7 students in the class (all mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 5.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
5a) Identifies and achieves goal/purpose	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	85.7%
5b) Assumes and fulfills roles and responsibilities as appropriate. Leadership strives to create a	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	85.7%

collaborative and inclusive environment.				
5c) Interacts and communicates effectively with team/group members.	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	85.7%
5d) Reconcile disagreement	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	N/A
5e) Share appropriately	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	100%
5f) Develop strategies for effective action	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	N/A
5g) Documentation and record keeping	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	85.7%
5h) Cultural adaptation	Lab Exercise	1-4 proficiency scale	80% score 3 or 4	N/A

Table 5. ME Assessment Results for SLO 5, Fall 2021, Seattle Campus

Students worked effectively as a team to carry out experiment and acquire data for later analysis
No weaknesses observed

Appendix 3 Direct Assessment ISLO #1 ("Communications")

ISLO 1; An ability to communicate effectively with a range of audiences.

Klamath Falls Assessment, 2021 – 2022 Academic year.
Direct Assessment #1 Klamath Campus

The faculty assessed this outcome in MECH 437, using a lab report on Heat Transfer experiment. There were a total of 21 students in the class (16 mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 1.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
3a) Purpose and Audience	Lab report on experiment	1-4 proficiency scale	80% score 3 or 4	91%
3b) Focus and Organization	Lab report on experiment	1-4 proficiency scale	80% score 3 or 4	86%

3c) Support and Documentation	Lab report on experiment	1-4 proficiency scale	80% score 3 or 4	68%
3d) Style and Conventions	Lab report on experiment	1-4 proficiency scale	80% score 3 or 4	82%
3e) Visual Communication (where appropriate)	Lab report on experiment	1-4 proficiency scale	80% score 3 or 4	82%

Table 1. ME Assessment Results for SLO 3, Winter 2022, Klamath Falls Campus

No real strengths were identified, the majority of the students showed proficiency, but only a small percentage showed high proficiency.
The students need to work on their support material, specifically on References.

Portland Metro Assessment, 2021 – 2022 Academic year.
Direct Assessment #1 Portland Metro Campus

The faculty assessed this outcome in MECH 318, using a lab report on pressure measurement. There were a total of 16 students in the class (10 mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 2

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
3a) Purpose and Audience	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	100%
3b) Focus and Organization	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	100%
3c) Support and Documentation	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	100%
3d) Style and Conventions	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	100%
3e) Visual Communication (where appropriate)	Rubric-scored quiz questions	1-4 proficiency scale	80% score 3 or 4	100%

Table 2. ME Assessment Results for SLO 3, Winter 2022, Portland Metro Campus

Students were enthusiastic, and in general presented good work
Some students did not fully understand expectations, and some did better than others
No actions recommended, and need to find way to grade individuals as this was a group exercise

Portland Metro Assessment, 2021 – 2022 Academic year.
Direct Assessment #2 Portland Metro Campus

The faculty assessed this outcome in MECH 437, using a lab report on pressure measurement. There were a total of 17 students in the class (12 mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 3.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
3a) Purpose and Audience	Project/Tech Report	1-4 proficiency scale	80% score 3 or 4	94.1%
3b) Focus and Organization	Project/Tech Report	1-4 proficiency scale	80% score 3 or 4	84.2%
3c) Support and Documentation	Project/Tech Report	1-4 proficiency scale	80% score 3 or 4	94.1%
3d) Style and Conventions	Project/Tech Report	1-4 proficiency scale	80% score 3 or 4	94.1%
3e) Visual Communication (where appropriate)	Project/Tech Report	1-4 proficiency scale	80% score 3 or 4	100%

Table 3. ME Assessment Results for SLO 3, Winter 2022, Portland Metro Campus

Students were able to collaboratively establish and met the objectives while leveragine the theoretical knowledge gained in previous courses
No weaknesses identified
No actions recommended

Seattle Assessment, 2021 – 2022 Academic year.
Direct Assessment #1 Seattle Campus

The faculty assessed this outcome in MECH 417 in Winter term 2022, using a research paper on hydroelectric power. There were a total of 8 students in the class (all mechanical engineering). Only the mechanical engineering students were considered in this assessment and the results are show in table 4.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
3a) Purpose and Audience	Research Paper	1-4 proficiency scale	80% score 3 or 4	85.7%
3b) Focus and Organization	Research Paper	1-4 proficiency scale	80% score 3 or 4	85.7%

3c) Support and Documentation	Research Paper	1-4 proficiency scale	80% score 3 or 4	85.7%
3d) Style and Conventions	Research Paper	1-4 proficiency scale	80% score 3 or 4	85.7%
3e) Visual Communication (where appropriate)	Research Paper	1-4 proficiency scale	80% score 3 or 4	85.7%

Table 4. ME Assessment Results for SLO 3, Winter 2022, Seattle Campus

Students' performance was good overall
No weaknesses observed