

Section 1 – Program Mission and Educational Objectives

- **Program Mission:**

The mission of the Manufacturing Engineering Technology Master of Science Degree program is to produce engineering graduates with an advanced technical education that allows them to take on leadership roles in globally competitive manufacturing industries.

- **Program Educational Objectives:**

The educational objectives of the program are to:

1. Provide manufacturing and non-manufacturing engineers with advanced technical and managerial skills that allow them to be the leaders in manufacturing industries.
2. Expand graduates' expertise through industry-based applied research, lab-based design and analysis.
3. Strengthen graduates' ability to work productively in a global manufacturing environment.

- **Relationship of Program Educational Objectives to Oregon Tech Mission:**

The Oregon Tech mission statement is as follows: “Oregon Institute of Technology (“Oregon Tech”), Oregon’s public polytechnic university, offers innovative, professionally-focused undergraduate and graduate degree programs in the areas of engineering, health, business, technology, and applied arts and sciences. To foster student and graduate success, the university provides a hands-on, project-based learning environment and emphasizes innovation, scholarship, and applied research. With a commitment to diversity and leadership development, Oregon Tech offers statewide educational opportunities and technical expertise to meet current and emerging needs of Oregonians as well as other national and international constituents.”

The mission statement of the MFG Program is in line with and built upon the mission statement of the Institution. This is evident by comparing the Program Mission Statement with the Institution’s Mission Statement given previously. The intent of the MFG Program in providing an applied manufacturing engineering education is directly in line with the Institution mission statement

PEO1 requires that graduates acquire advanced technical and managerial skills that allow them to be leaders in manufacturing industries. The MSMFG curriculum complies with the university’s mission in offering “innovative, professionally-focused degree programs” with an emphasis on “hands-on education”.

PEO2 focuses on expanding graduates’ expertise through industry-based applied research, lab-based design and analysis. This is consistent with the university’s mission to be committed to leadership and diversity development.

PEO3 has a focus on working productively in a global manufacturing environment. The PEO is in alignment with the university’s mission to meet “the current and emerging needs of Oregonians as well as other national and international constituents”.

Section 2 – Program Description and History

- **Background:**

Oregon Tech Seattle provides an at-work solution to obtaining a graduate degree at the Masters level in Manufacturing Engineering Technology, exclusively for Boeing employees. The Masters program was started in 2005.

The Oregon Tech Seattle program has extended the educational opportunities offered to Boeing employees to include a Master of Science in Manufacturing Engineering Technology. This program is designed to provide practicing engineers with additional skills and understanding of today's evolving manufacturing industry. As with the Oregon Tech Seattle Bachelor's program, our faculty have extensive industry experience, and most are practicing engineers working in the aerospace industry.

- **Location:**

The BSMFG program is located at Oregon Tech campuses (Klamath Falls, Wilsonville and Seattle), serving a large portion of rural Oregon, Washington and California, as well as the Portland and Seattle metropolitan area. The four MMET programs, MFG, Mechanical Engineering Technology (MET), Mechanical Engineering (ME), and the Master of Science in Manufacturing Engineering Technology (MS MFG) reside in three locations. Currently, the Master of Science in Manufacturing Engineering Technology is offered only in Seattle.

- **Program Constituencies and Industry Relationships:**

To maintain a program that is current with the needs of industry and of sufficient technical rigor requires input from many different constituents. Some of the constituents are industrial and some academic. The various constituents that are used in the program assessment process include BSMFG graduates and students, Industry Advisory Board (IAB) members, employers and faculty. Input from these constituents is gathered and reviewed in a periodic manner to ensure the PEOs remain aligned with the direction of industry, as well as the university's mission and resources.

The IAB provides advice and counsel to the MFG program with respect to curriculum content, instructional resources, career guidance and placement activities, accreditation reviews, and professional- development assistance. In addition, each advisory-committee member serves as a vehicle for public relations information and potentially provides a point of contact for the development of specific opportunities with industry for students and faculty.

The IAB and the program faculty meet once or twice per year (typically Fall and Spring terms). At these meetings, faculty have an opportunity to provide and update on the state of the department and its programs, as well as receiving input and feedback from the IAB on any new departmental initiatives in light of the current industry trends and needs. The IAB periodically reviews the program PEOs and SOs to ensure they remain relevant and responsive to the needs of industry. Program changes are also reviewed by the IAB before implementation.

In summary the constituents of the Manufacturing Engineering Technology Program include:

- Faculty
- Community Colleges
- Alumni
- Industry Advisory Committee
- Industry/Employers

The constituencies for the MFG program in Wilsonville and Seattle are the same as those for the Klamath Falls campus/program. The Seattle program is offered exclusively for employees of the Boeing Company. Boeing and its employees are the primary stakeholders. The quality of the programs in Wilsonville and Seattle is critical to the overall MFG program quality so all those listed above are influential and direct/guide the program as a whole.

- **Program Enrollment:**

MS Manufacturing Engineering Tech Enrollment					
	Fall 2018	Fall 2019	Fall 2020	Fall 2021	Fall 2022
Seattle-Boeing	7	8	9	6	7

- **Program Graduates:**

MS Manufacturing Engineering Tech - Degrees Awarded					
	2017-18	2018-19	2019-20	2020-21	2021-22
*Seattle-Boeing	5	5	3	3	0

- * There was one (1) student in 2017-18 and one (1) student in 2018-19 who had Klamath Falls Campus at the time of graduation in MS-MFG. The 2 students are reported under Seattle-Boeing.

Section 3 – Program Student Learning Outcomes

The graduates of the Master of Science Degree program in Manufacturing Engineering Technology must demonstrate:

1. The ability to solve engineering problems using science and design technology.
2. The ability to integrate current computer tools for use in solving manufacturing problems.
3. The ability to use advanced manufacturing methods and materials to improve current manufacturing processes using a variety of tools, such as: product life cycle management, quality and inventory control, and planning techniques.
4. The ability to incorporate business, financial and management tools to improve manufacturing processes.
5. The ability to communicate effectively in both written and oral forms.

Section 4 – Curriculum Map

The Master of Science in Manufacturing Engineering Technology requires completing 45 credit hours of graduate work, with at least 30 credit hours of graduate coursework from the following four Curriculum Content Areas (CCAs):

1. Engineering Science and Design Technology
2. Manufacturing Software and Computer Integration
3. Advanced Manufacturing Materials and Processes Technology
4. Business, Financial and Management Processes

In addition to the 30 CCA credit hours, students must complete 12 credits toward thesis or 9 credits toward an approved project and three credits in graduate seminars. Students must take at least one course in each of the four CCAs and three courses in at least one CCA. All graduate courses are three credits each.

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

MSMFG PLSO	Oregon Tech ESLO
1. An ability to solve problems using science and design technology	Quantitative Literacy and Reasoning
2. An ability to integrate current computer tools for use in solving manufacturing problems	Diverse Perspectives
3. An ability to use advanced manufacturing methods and materials to improve current manufacturing processes using a variety of tools, such as: product life cycle management, quality and inventory control, and planning techniques	Inquiry and Analysis Teamwork
4. An ability to incorporate business, financial and management tools to improve manufacturing processes	Ethics and Reasoning
5. An ability to communicate effectively in both written and oral forms	Communication

MSMFG Program PLSO to ELSO Course Outcome Mapping

Section 5 – Assessment Cycle

MS Manufacturing has never turned in a report to the assessment committee. In the past, it was understood that only Bachelor’s programs were creating assessment reports. The standards updated in 2020 included planning for master’s programs as well. The verbiage for the master’s program requirements. “**1.C.9** The institution’s graduate programs are consistent with its mission, are in keeping with the expectations of its respective disciplines and professions, and are described through nomenclature that is appropriate to the levels of graduate and professional degrees offered. The graduate programs differ from undergraduate programs by requiring, among other things, greater: depth of study; demands on student intellectual or creative capacities; knowledge of the literature of the field; and ongoing student engagement in research, scholarship, creative expression, and/or relevant professional practice.”

In light of this change, we are now developing a plan to collect data during this academic year to have a report next year. An Assessment Schedule is currently being developed and will become effective Winter 2023.

ISLO	PSLO	2022-2023	2023-2024	2024-2025
Communication	PSLO 5	X		
Ethics	PSLO 4		X	
Teamwork	PSLO 3		X	
Diversity				X
Inquiry and Analysis	PSLO 3			X
Quantitative Literacy	PSLO1	X		