Program and Learning Outcomes Assessment Plan: Professional Master of Science and Technology

Master of Science and Technology:
Biotechnology
Computational and Data Science
Earth Resource Management
Environmental Science
Science Instrumentation

Program Purpose

The Professional Master of Science and Technology degree provides programs of study for students who want to develop science, technical, and business skills required for management careers in technology-based industries, government agencies, or non-profit organizations.

Collection, analyzing, and reporting learning outcomes for 2020–2021

Program Learning outcomes

Program learning outcomes are mapped against MST courses in Table 1. Descriptions of assignments which support program learning objectives follow in subsequent sections.

Program assessments

Project proposals, presentations, and the student's final report will be collected using Canvas. The PMST program has setup a non-semester-based course in Canvas and requires students to upload each of these materials as an "assignment." The assignment is graded as complete or incomplete. These items will then be downloaded to an online storage site by the program staff for permanent archiving.

Course assessments

MST course instructors will designate one or more assignments that document student learning outcomes. These assignments will be downloaded to an online storage site by the course instructor that is shared with the program staff.

Table 1. Program Learning Outcomes mapped to MST courses.

	PMST Program Learning Objectives (PLOs)	MST 6100	MST 6110	MST 6200	MST 6210	MST 6600	MST 6974	MST 6975
1.	Integrate one or more STEM topics and one or more transferable skills from advanced coursework into their Professional Experience Project proposal.						X	X
2.	Construct a project plan using a standardized process.		X		X		X	X
3.	Demonstrate their ability to effectively communicate in writing how fundamental STEM topics are used in an industry, a non-profit, or a government agency.	X						X
4.	Demonstrate their ability to effectively communicate technical science and technology data to a broad audience.			X	X	X		X
5.	Describe how government policies impact industries in their field of study.	X						
6.	Show how scientists and engineers support and work with business development or other non-technical teams.		X		X	X	X	X

Description of assignments mapped to Program Learning Objectives

MST 6100 Policy and Regulatory Considerations for Scientists and Engineers

PLO 3: Class Papers. A series of 3 related papers that are centered around a science and technology topic and focus on writing for policy analysis and governing recommendations

PLO 5: Reflective Course Assignment.

MST6110 Business Development for Scientists and Engineers

PLO 2: Students will submit a market requirements document that incorporates project planning techniques.

PLO 6: Students will prepare a business presentation on a STEM topic for a non-STEM audience.

MST 6200 Professional Development for Scientists and Engineers

PLO 2: Generate a safety and operational protocol for a sampling procedure related to their field of study

PLO 4: Individual Presentations that focus on communicating technical data to an interdisciplinary audience

MST 6210 Operations and Project Management for Scientist and Engineers

This is a new class for the program and is currently under development for Spring 2021.

PLO 2: Operations and Project Management assignment (TBD)

PLO 4: Operations and Project Management assignment (TBD)

PLO 6: Operations and Project Management assignment (TBD)

MST 6600 Applied Statistical Techniques for Scientists and Engineers

PLO 4: Individual Presentations that focus on communicating technical data to an interdisciplinary audience

PLO 6: Demonstrate the construction of graphics for communicating technical results for publication in non-technical forums.

MST 6974 Project Planning

PLO 1: Students submit a draft of the project pre-proposal which contains a minimum of one STEM and one non-STEM objective.

PLO 2: Students apply project planning process to construct a work breakdown structure (WBS) and traditional Gantt chart to their proposed professional experience project.

PLO 6: Students submit a draft of their project pre-proposal describing how the proposed project supports a business objective.

MST 6975 Professional Experience Project (Internship)

PLO 1, PLO 2, PLO 3: Professional Experience Project proposal

PLO 3, PLO 4, PLO 6: Professional Experience Project report

Summary of program review activities

Feedback

The PMST program uses the following to solicit feedback on program:
- Student course feedback using the Center for Teaching and Learning Excellence's survey platform
- An Exit Survey is sent to PMST graduates each year
- Review of course content by the PMST program's curriculum committee

Program Review
- Graduate Council Review for PMST program will be during the 2021-2022 academic year.
- Affiliation of the PMST program with the National Professional Science Masters Association was completed January 2020 and will be reviewed in 2025.