Assessment Plan

Western Michigan University

Manufacturing Engineering (EUP)

Mission Statement: The Manufacturing Engineering (MFE) program provides understanding of the manufacturing production processes and systems within an industrial manufacturing environment.

The MFE degree program prepares students for careers in manufacturing, such as: production/process/manufacturing engineering, manufacturing systems engineering and/or production/technical supervision and management.

The MFE program provides a good educational program of instruction that is industrially relevant today and prepares our students for future advancement and growth, and equips our students to contribute at a higher level on their job.

Vision Statement: The vision of the Manufacturing Engineering Department is to be: an industry focused, regionally recognized program that delivers an efficient and effective, and easily accessible-student friendly education program, utilizing appropriate resources and technology in an accommodating (to student and faculty needs and schedules) and supportive environment, which affords students (specifically non traditional students) and faculty opportunities for intellectual growth, in a applied (practical) educational environment.

Outcome: ABET Learning Outcome A-Engineering

An ability to apply knowledge of mathematics, science, and engineering

Track: Program Outcome

Outcome Status: Active

Means of Assessment

Assessment Method	Criterion	Schedule	Active
homework exercise: create a pre-lim design, including evidence of 1. industry sponsor 2. project schedule 3. lit review **Assessment Method Category:** Course-Embedded Measure	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 4800 - Senior Design I

Outcome: ABET Learning Outcome B-Engineering

An ability to design and conduct experiments, as well as to analyze and interpret data

Track: Program Outcome

Outcome Status: Active

Means of Assessment

Assessment Method	Criterion	Schedule	Active
Projects, Reports, Portfolios **Assessment Method Category:** Course-Embedded Measure	Students can effectively communicate both written and orally.	Semester (fall and spring)	Yes

Related Courses

* MFE 4440 - Simulation and Industrial Operations

Outcome: ABET Learning Outcome C-Engineering

An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

Track: Program Outcome

Outcome Status: Active

Means of Assessment

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Tests, quizzes, exams, homework and exercises **Assessment Method Category:** Course-Embedded Measure	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 3400 - Design for People at Work

Outcome: ABET Learning Outcome D-Engineering

An ability to function on multi-disciplinary teams

Track: Program Outcome

Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Project sponsor provides a written evaluation of capstone project **Assessment Method Category:** Capstone	Students will score 3.5 of higher on presentation evaluations	Every semester that the capstone project course (MFE 4820) is offered.	Yes
Stakeholders: Graduates, Alumni, Employers **Assessment Method Category:** Survey-Employer	The majority of students, alumni and employers are satisfied with the program.	Yearly (students) 5 Years (alumni and employers)	Yes

Related Courses

* MFE 4820 - Senior Design II

Outcome: ABET Learning Outcome E-Engineering

An ability to identify, formulate, and solve engineering problems

Track: Program Outcome

Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Tests, quizzes, exams, homework and exercises **Assessment Method Category:** Course-Embedded Measure	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 4400 - Production Engineering

Outcome: ABET Learning Outcome F-Engineering

An understanding of professional and ethical responsibility

Track: Program Outcome

Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Focus Groups: Reviews of courses, program by industrial advisory board, (IAB), ABET and SME	Reviews must be at least satisfactory	Courses: Semester Program: Yearly by IAB, 3-6 years by ABET/SME	Yes

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**

Related Courses

* PHIL 316 - Ethics in Engineering and Technology

Outcome: ABET Learning Outcome G-Engineering

An ability to communicate effectively

Track: Program Outcome
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Focus Groups: Reviews of courses, program by industrial advisory board, (IAB), ABET and SME	Reviews must be at least satisfactory	Courses: Semester Program: Yearly by IAB, 3-6 years by ABET/SME	Yes

Related Courses

* IME 102 - Technical Communications

Outcome: ABET Learning Outcome H-Engineering

The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

Track: Program Outcome
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Stakeholders: Seniors, Graduates, Alumni, Employers **Assessment Method Category:** Survey-Employer	The majority of students, alumni and employers are satisfied with the program.	Yearly (students) 5 Years (alumni and employers	Yes

Related Courses

* IME 150 - Intro to Manufacturing

Outcome: ABET Learning Outcome I-Engineering

A recognition of the need for, and an ability to engage in life-long learning

Track: Program Outcome
Start Date: 01/01/2008
End Date: 08/13/2008
Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Entrance/Exit (Pre/Post) Measures: Certification Exam **Assessment Method Category:** Exam-Standardized	Passing grade	Entrance exam: in conjunction with introductory course MFE 1200 Exit Exam: Every year that senior design (MFE 4800/4820) is offered	Yes
Determine number of life long learning activites attended **Assessment Method Category:**	Each student to attend a minimum of three (3) life long learning activities during the	Every semester that the capstone II course is offered (MFE 4820)	Yes

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
	senior design (capstone) course		
Capstone			

Related Courses

* MFE 1200 - Engineeering Design and Verification
* MFE 4820 - Senior Design II

Outcome: ABET Learning Outcome J-Engineering

A knowledge of contemporary issues

Track: Program Outcome

Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Survey: Course Evaluations Stakeholders: Seniors, Graduates, Alumni, Employers	The majority of students, alumni and employers are satisfied with the program	Yearly (students) 5 Years (alumni and employers)	Yes

Related Courses

* Gen Ed Area III - The United States, Cultures and Issues

Outcome: ABET Learning Outcome K-Engineering

An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

Track: Program Outcome

Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Tests - Final Exam 1. SPC, control charts for variable (x bar and R) and attribute data (c charts0 2. Process capability: Cp and Cpk indices 3. DOE: analysis of variance, and use of minitab **Assessment Method Category:** Course-Embedded Measure	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 4420 - Quality Assurance

Outcome: ABET Learning Outcome A-SME

Materials and manufacturing: Understanding the behavior and properties as they are altered and influenced by processing in manufacturing

Track: Program Objective

Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Course embedded measures: tests, quizzes, exams, homework and exercises	The majority of the students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 3300 - Manufacturing Materials

Outcome: ABET Learning Outcome B-SME

Process, assembly and product engineering: Understanding the design of products and equipment, tooling, and environment necessary for their manufacture

Track: Program Outcome

Outcome Status: Active

Means of Assessment

Assessment Method	Criterion	Schedule	Active
Tests, quizzes, exams, homework and exercises **Assessment Method Category:** Course-Embedded Measure	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 4240 - Tool Design

Outcome: ABET Learning Outcome C-SME

Manufacturing competitiveness: Understanding the creation of competitive advantage through manufacturing planning, strategy and control

Track: Program Outcome

Outcome Status: Active

Means of Assessment

Assessment Method	Criterion	Schedule	Active
Course Embedded Measures: Tests, quizzes, exams, homework and exercises	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* IME 310 - Engineering Economy
* MFE 4400 - Production Engineering

Outcome: ABET Learning Outcome D-SME

Manufacturing systems design: Understanding the analysis, synthesis, and control of manufacturing operations using statistical and calculus based methods, simulation and information technology

Track: Program Outcome

Outcome Status: Active

Means of Assessment

Assessment Method	Criterion	Schedule	Active
Report, project, presentation or portfolio **Assessment Method Category:** Course-Embedded Measure	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 4440 - Simulation and Industrial Operations

Outcome: ABET Learning Outcome E-SME

Laboratory experience: Measure manufacturing process variables in a laboratory and make technical inferences about the process

Track: Program Outcome

Outcome Status: Active

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Reports, projects, presentation or portfolio **Assessment Method Category:** Course-Embedded Measure	The majority of students are average or above	Every semester (fall and spring)	Yes

Related Courses

* MFE 4200 - Advanced Manufacturing Processes

Outcome: xtra

benchmarking

Assessment Evaluation: Record of Post Graduate Employment and Accomplishments: Benchmarking MFE programs/departments, job placement

Means of Assessment			
Assessment Method	**Criterion**	**Schedule**	**Active**
Compare our graduates to other grads **Assessment Method Category:** Survey-Employer	wmu grads are as good or better than average		Yes