NOT FOR USE FOR CURRICULAR COURSE CHANGES
REQUEST FOR PROGRAM IMPROVEMENTS

NOTE: Changes to programs may require course changes, which must be processed electronically. Any questions should be directed to Associate Provost David Reinhold at 7-4564 or david.reinhold@wmich.edu

DEPARTMENT: EDMMS
PROPOSED COLLEGE: CEAS
EFFECTIVE FALL YEAR: 2020

PROPOSED IMPROVEMENTS: Academic Program Proposed Improvements

☐ New degree*
☐ New major*
☐ New curriculum*
☐ New concentration*
☐ New certificate*
☐ Admission requirements
☐ Graduation requirements
☐ Change in Title
☐ Transfer
☐ Deleteion*
☐ Revised major
☐ Revised minor

☑ Other (explain**)

** Other: Minor revisions to curriculum to accommodate new WES requirements

Title of degree, curriculum, major, minor, concentration, or certificate: B.S. in Manufacturing Engineering Technology

Chair, Department Curriculum Committee: ___________________________ Date: 10/22/19

CHECKLIST FOR DEPARTMENT CHAIRS/DIRECTORS

☐ For new programs and other changes that have resource implications, the dean has been consulted.
☐ When appropriate, letters of support from department faculty are attached.
☐ When appropriate, letters of support from other departments in the same college are attached.
☐ When appropriate, letters of support from other college deans, whose programs/courses may be affected by the change, are attached.
☐ The proposal has been reviewed by HIGE for possible implications for international student enrollment.
☐ The proposal is consistent with the departmental assessment plan, and identifies measurable learning outcomes for assessment.
☐ Detailed resource plan is attached where appropriate.
☐ All questions attached have been completed and supporting documents are attached.
☐ The proposal is written and complete as outlined in the Faculty Senate guidelines and the curriculum change guides.

Chair/Director: ___________________________ Date: 10/22/19

CHECKLIST FOR COLLEGE CURRICULUM COMMITTEE

☐ The academic quality of the proposal and the faculty involved has been reviewed.
☐ Detailed resource plan is attached where appropriate.
☐ Consistency between the proposal and the relevant catalog language has been confirmed.
☐ The proposal has been reviewed for effect on students transferring from Michigan community colleges. Detailed information on transfer articulation must be included with undergraduate proposals.
☐ Consistency between the proposal and the College and department assessment plans has been confirmed.
☐ Consistency between the proposal and the College and department strategic plans has been confirmed.
☐ All questions attached have been completed and supporting documents are attached.
☐ The proposal is written and complete as outlined in the Faculty Senate guidelines and the curriculum change guides.

Chair, College Curriculum Committee: ___________________________ Date:

Revised Sept. 2018. All previous forms are obsolete and should not be used.
NOT FOR USE FOR CURRICULAR COURSE CHANGES
REQUEST FOR PROGRAM IMPROVEMENTS

CHECKLIST FOR COLLEGE DEANS

☐ For new programs and proposed program deletions, the provost has been consulted.
☐ For new programs, letter of support from University Libraries Dean indicating library resource requirements have been met.
☐ When appropriate, letters of support from other college faculty and/or chairs are attached.
☐ When appropriate, letters of support from other college deans, whose programs/courses may be affected by the change, are attached.
☐ The proposal has been reviewed for implications for accreditation, certification, or licensure.
☐ Detailed resource plan is attached where appropriate.
☐ All questions attached have been completed and supporting documents are attached.
☐ The proposal is written and complete as outlined in the Faculty Senate guidelines and the curriculum change guides.

Dean: ____________________________        Date: ____________________________

FOR PROPOSALS REQUIRING REVIEW BY:
GSC/USC; EPGC, GRADUATE COLLEGE, and/or FACULTY SENATE EXECUTIVE BOARD

☐ Return to Dean

☐ Forward to: Curriculum Manager: ____________________________        Date: ____________________________

☐ Approve ☐ Disapprove

☐ Approve ☐ Disapprove Chair, GSC/USC: ____________________________        Date: ____________________________

☐ Approve ☐ Disapprove Chair, EPGC: ____________________________        Date: ____________________________

☐ Approve ☐ Disapprove Graduate College Dean: ____________________________        Date: ____________________________

☐ Approve ☐ Disapprove Faculty Senate President: ____________________________        Date: ____________________________

☐ Approve ☐ Disapprove *needs review by Provost: ____________________________        Date: ____________________________

Revised Sept. 2018. All previous forms are obsolete and should not be used.
1. Explain briefly and clearly the proposed improvement:

Updated program content to address Western Essential Studies Program requirements and minor curriculum changes to accommodate WES. Increased credit hours for both Health and Wellness WES (formerly Gen Ed Area VIII-Health and Well-Being) and EDMM 4810 from 2 to 3 credit hours. WES has more assigned areas of study which necessitated removal of one (1) of the Approved Electives. In addition, CS 1021 is no longer being offered and was deleted. Finally, at the recommendation of various groups including the MFT Industrial Advisory Board, EDMM 1501 was added which adds one (1) credit to the curriculum. The sum total of all the changes is that the curriculum moves from 126 credit hours to 128. With that said, the MFT was at 126 credit hours prior to the 2018-2019 catalog.

In addition, all automotive courses were deleted from the list of approved electives because the professor retired and the position was eliminated as part of a budget cut.

2. Rationale. Give your reason(s) for the proposed improvement.

Required to remove references to general education requirements and update with Western Essential Studies Program requirements.

3. Effect on other colleges, departments, or programs. If consultation with others is required, attach evidence of consultation and support. If objections have been raised, document the resolution. Demonstrate that the program you propose is not a duplication of an existing one.

No effect.

4. Effect on your department’s programs. Show how the proposed change fits with other departmental offerings.

None.

5. Alignment with college’s and department’s strategic plan, mission, and vision.

Provides broad-based liberal arts education for engineering technology students and supports both ABET requirements to ensure we graduate well-rounded engineering technologists ready to address the challenges facing our society.

6. Effects on enrolled students: Are program conflicts avoided? Will your proposal make it easier or harder for students to meet graduation requirements? Can students complete the program in a reasonable time? Show that you have considered scheduling needs and demands on students’ time.

No effect on enrolled students as they will continue under the catalog year with which they entered. A deliberate transition will occur university-wide to address any issues that arise for current students.

7. Student or external market demand. What is your anticipated student audience? What evidence of student or market demand or need exists? What is the estimated enrollment? What other factors make your proposal beneficial to students?

Not applicable.

8. Effects on resources. Explain how your proposal would affect department and University resources, including faculty, equipment, space, technology, and library holdings. If proposing a new program, include a letter and/or email of support from the university libraries affirming that the library resource issues have been reviewed. Tell how you will staff additions to the program. If more advising will be needed, how will you provide for it? What will be the initial one-time costs and the ongoing base-funding costs for the proposed program? (Attach additional pages, as necessary.)

None. All revisions to the engineering technology program in response to the new Western Essential Studies Program were coordinated across the college and university through the Western Essential Studies Program design.

9. List the learning outcomes for the revised or proposed major, minor, or concentration. The department will use these outcomes for future assessments of the program.

The Manufacturing Engineering Technology Educational Objectives are:

1) Plan, design, analyze, implement and improve cost effective manufacturing service systems.

Revised Sept. 2018. All previous forms are obsolete and should not be used.
2) Build and use management tools to analyze and solve problems effectively and make decisions from a systems prospective.
3) Communicate effectively in verbal, written and graphic forms.
4) Pursue professional growth and interact effectively in work environments.

The Manufacturing Engineering Technology Student Outcomes are:

1) An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, or technology to solve broadly-defined engineering problems
2) An ability to design systems, components or processes for broadly-defined engineering technology problems appropriate to program educational objectives
3) An ability to apply written, oral and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature
4) An ability to conduct standard tests and measurements; to conduct, analyze and interpret experiments; and to apply experimental results to improve processes
5) An ability to function effectively as a member or leader on a technical team

10. Describe how this change is a response to assessment outcomes that are part of a department or college assessment plan or informal assessment activities.

The changes were in response to a university-wide revised general education program.

11. (Undergraduate proposals only) Describe in detail how this change affects transfer articulation for Michigan community colleges. For new majors or minors, describe transfer guidelines to be developed with Michigan community colleges. For revisions to majors or minors, describe necessary revisions to Michigan community college guidelines. Department chairs should seek assistance from college advising directors or from the admissions office in completing this section.

This aspect is being addressed by the Director of the Western Essential Studies Program, the Associate Provost for Assessment and Undergraduate Studies, and the advising staff.

12. Please offer both “Current Catalog Language” and “Proposed Catalog Language” if there is to be a change in the catalog description for a given program. For the “current” language, please copy and paste relevant language from the most current catalog and for the “proposed” language, please share the exact proposed new catalog language. As possible, bold or otherwise note the key changes in the new proposed catalog language.

CURRENT CATALOG COPY
Put in current curriculum here

Manufacturing Engineering Technology

Accredited by the Engineering Technology Commission ETAC of ABET, [www.abet.org](http://www.abet.org).

The Manufacturing Engineering Technology curriculum offers preparation for entry positions in manufacturing industries. Understanding of materials and production processes equips graduates to plan manufacturing practices and to develop tooling, machines and systems necessary for efficient production. Program minors allow students to specialize in cast metals or plastics.

The educational objectives of the Manufacturing Engineering Technology program are:

1. Plan, design, analyze, implement, and improve cost-effective manufacturing methods.
2. Synthesize and use technical tools to monitor and control manufacturing processes to solve production problems effectively.
3. Manage projects, people, and resources effectively.
4. Communicate effectively in verbal, written, visual, and graphical forms.

Revised Sept. 2018. All previous forms are obsolete and should not be used.
5. Pursue professional growth and interact effectively in work environments.

(For up-to-date educational objectives and learning outcomes, see department webpage at www.wmich.edu/edmms)

Baccalaureate-Level Writing Requirement

Students who have chosen the Manufacturing Engineering Technology curriculum will satisfy the Baccalaureate-Level Writing Requirement by successfully completing EDMM 4910: Multidisciplinary Senior Proposal and EDMM 4920: Multidisciplinary Senior Project.

Requirements

1. A grade point average of 2.0 or better must be earned in required courses with ECE, MSE, ME, IEE, and EDMM prefixes.
2. No more than two grades of “D” or “DC” in courses presented for graduation may be counted for graduation.
3. Complete the following program of 126 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.
4. Prior to enrollment in 3000/4000-level courses, students must 1) place resume with Career and Student Employment Services; 2) complete the following courses with a grade of “C” or better: CHEM 1100 and 1110; IEE 1020; EDMM 2460; IEE 2610; PHYS 1150 and 1160; and MATH 1220 or 1700. These courses are indicated below.
5. The Manufacturing Engineering Technology curriculum requires students to complete a course in General education Area I, Area II, Area III, Area IV, Area V, and Area VIII. At least two of the General Education Area courses must be at the 3000/4000-level, and no more than two courses from any one department may be used to satisfy the Area requirements. Manufacturing Engineering Technology majors are required to take EDMM 3020 for Area V.

First Semester (15 hours)

- General Education Area VIII: Health and Well-being Credits: 2 hours
  - IEE 1020 - Technical Communication Credits: 3 hours
  - (Satisfies General Education Proficiency 1)
  - EDMM 1420 - Engineering Graphics Credits: 3 hours
  - EDMM 1500 - Introduction to Manufacturing Credits: 3 hours
  - (Satisfies General Education Area VII)
  - MATH 1180 - Precalculus Mathematics Credits: 4 hours
  - (Satisfies General Education Proficiency 3)

Second Semester (16 hours)

Revised Sept. 2018. All previous forms are obsolete and should not be used.
General Education Area IV: Other Cultures and Civilizations*  Credits: 3 hours

- **CHEM 1100 - General Chemistry I** Credits: 3 hours
- (Satisfies General Education Area VI)
- AND
- **CHEM 1110 - General Chemistry Laboratory I** Credits: 1 hour
- (Satisfies General Education Area VI)
- **MATH 1220 - Calculus I** Credits: 4 hours
- (Satisfies General Education Proficiency 4b)
- OR
- **MATH 1700 - Calculus I, Science and Engineering** Credits: 4 hours
- (Satisfies General Education Proficiency 4b)
- **PHYS 1130 - General Physics I** Credits: 4 hours
- (Satisfies General Education Area VI)
- AND
- **PHYS 1140 - General Physics I Laboratory** Credits: 1 hour
- (Satisfies General Education Area VI)

### Third Semester (17 hours)

- **CS 1021 - Introduction to Engineering Computing I: Spreadsheets** Credits: 1 hour
- **EDMM 2460 - Introduction to Computer-Aided Design** Credits: 3 hours
- **EDMM 2540 - Machining Processes** Credits: 3 hours
- **IEE 2610 - Engineering Statistics** Credits: 3 hours
- **EDMM 2830 - Thermodynamics** Credits: 2 hours
- **PHYS 1150 - General Physics II** Credits: 4 hours
- AND
- **PHYS 1160 - General Physics II Laboratory** Credits: 1 hour

### Fourth Semester (16 hours)

- **EDMM 2001 - Applied Electricity/Electronics** Credits: 3 hours
- **EDMM 2500 - Plastics Properties and Processing** Credits: 3 hours
- **EDMM 2810 - Statics and Strength of Materials** Credits: 4 hours
- **EDMM 3020 - Engineering Teams: Theory and Practice** Credits: 3 hours
- (Satisfies General Education Area V)
- **EDMM 2560 - Properties of Materials** Credits: 3 hours
- or
- **ME 2500 - Materials Science for Engineers** Credits: 3 hours

### Fifth Semester (15 hours)

Revised Sept. 2018. All previous forms are obsolete and should not be used.
• Approved Elective  Credits: 3 hours

• EDMM 3480 - Designing for Production  Credits: 3 hours
• EDMM 3520 - Metal Casting  Credits: 3 hours
• EDMM 3540 - Metrology  Credits: 3 hours
• EDMM 3840 - Fluid Mechanics and Hydraulics  Credits: 3 hours

Sixth Semester (15 hours)

• General Education Area II: Humanities*
• Approved Elective  Credits: 3 hours

• EDMM 3260 - Operations Planning and Control  Credits: 3 hours
• EDMM 3280 - Quality Assurance and Control  Credits: 3 hours
• EDMM 3580 - Computer-Aided Manufacturing  Credits: 3 hours

Seventh Semester (17 hours)

• General Education Area I: Fine Arts*  Credits: 3 hours
• Approved Elective  Credits: 3 hours

• EDMM 3200 - Engineering Cost Analysis  Credits: 3 hours
• EDMM 4540 - Fabrication, Assembly and Finishing  Credits: 3 hours
• EDMM 4580 - Manufacturing Systems Integration  Credits: 3 hours
• EDMM 4910 - Multidisciplinary Senior Proposal  Credits: 2 hours

Eighth Semester (14 hours)

• General Education Area III: United States: Culture and Issues*  Credits: 3 hours
• Approved Elective  Credits: 3 hours

• EDMM 4020 - Engineering Leadership  Credits: 3 hours
• EDMM 4570 - Manufacturing for Sustainability  Credits: 3 hours
• EDMM 4920 - Multidisciplinary Senior Project  Credits: 2 hours
• (Satisfies General Education Proficiency 2)
• EDMM 4930 - Multidisciplinary Senior Project Consultation  Credits: 1 hour

Note:

Revised Sept. 2018. All previous forms are obsolete and should not be used.
* At least one of these General Education courses must be at the 3000/4000-level.

**Approved Technical Electives - MFT**

- **EDMM 2220 - Mobile Energy Sources and Lubricants** Credits: 3 hours
- **EDMM 2990 - Cooperative Education** Credits: 1 to 3 hours
- **EDMM 3120 - Systems Decision Making** Credits: 3 hours
- **EDMM 3240 - Automotive Power Systems** Credits: 3 hours
- **EDMM 3250 - Automotive Electrical Systems** Credits: 3 hours
- **EDMM 3500 - Production Thermoplastic Processing** Credits: 3 hours
- **EDMM 4250 - Automatic and Automated Drive Line Control Systems** Credits: 3 hours
- **EDMM 4260 - Automotive Structure, Ride, and Safety** Credits: 3 hours
- **EDMM 4520 - Die Casting** Credits: 3 hours
- **EDMM 4560 - Process Testing and Measurement** Credits: 3 hours
- **EDMM 4590 - Mold Design and Construction** Credits: 3 hours
- **EDMM 4870 - Manufacturing Productivity Techniques** Credits: 3 hours
- **EDMM 4880 - Applied Process Reengineering** Credits: 3 hours
- **EDMM 5500 - Advanced Plastics Processing** Credits: 3 hours
- **EDMM 5520 - Casting Simulation and Solidification** Credits: 3 hours
- **IFR 3420 - Ergonomics and Design** Credits: 3 hours
- **MATH 1230 - Calculus II** Credits: 4 hours
- OR
- **MATH 1710 - Calculus II, Science and Engineering** Credits: 4 hours
- **MATH 2720 - Multivariate Calculus and Matrix Algebra** Credits: 4 hours
- **MATH 3740 - Differential Equations and Linear Algebra** Credits: 4 hours
- **MSL 1020 - Introduction to the Profession of Arms** Credits: 1 hour
- **MSL 2020 - Army Doctrine and Team Development** Credits: 2 hours
- **MSL 3020 - Applied Leadership in Small Unit Operations** Credits: 3 hours
- **MSL 4020 - Mission Command and the Company Grade Officer** Credits: 3 hours
Manufacturing Engineering Technology


The Manufacturing Engineering Technology curriculum offers preparation for entry positions in manufacturing industries. Understanding of materials and production processes equips graduates to plan manufacturing practices and to develop tooling, machines and systems necessary for efficient production. Program minors allow students to specialize in cast metals or plastics.

The Manufacturing Engineering Technology Educational Objectives are:

1) Plan, design, analyze, implement and improve cost effective manufacturing service systems.
2) Build and use management tools to analyze and solve problems effectively and make decisions from a systems prospective.
3) Communicate effectively in verbal, written and graphic forms.
4) Pursue professional growth and interact effectively in work environments.

The Manufacturing Engineering Technology Student Learning Outcomes are:

1) An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, or technology to solve broadly-defined engineering problems.
2) An ability to design systems, components or processes for broadly-defined engineering technology problems appropriate to program educational objectives.
3) An ability to apply written, oral and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.
4) An ability to conduct standard tests and measurements; to conduct, analyze and interpret experiments; and to apply experimental results to improve processes.
5) An ability to function effectively as a member or leader on a technical team.

(For up-to-date Educational Objectives and Student Learning Outcomes, see department web page at www.wmich.edu/edmms)

WMU Essential Studies Program Requirements

Students who have chosen the Manufacturing Engineering Technology curriculum will satisfy the Western Essential Studies Program Requirements as outlined within the course listings below. To satisfy these requirements students take courses in twelve (12) categories. Six (6) of the courses are designated within the Manufacturing Engineering Technology program requirements and six (6) are free electives which students choose from a list of courses in the corresponding course category. Students will meet the planetary sustainability outcome in EDMM 1500: Introduction to Manufacturing and must select a course that satisfies the Diversity and Inclusion outcome when choosing a course in the other six (6) categories.

Requirements

1. A “C” or better must be earned in all required courses with EDMM or IEE prefix.

Revised Sept. 2018. All previous forms are obsolete and should not be used.
2. No more than two grades of “DC” or “D” in courses presented for graduation may be counted for graduation.

3. Complete the following program of 128 semester hours. The schedule below is one example leading to graduation in eight semesters.

4. Prior to enrollment in 3000/4000 level courses student’s must:
   - Place resume with Career and Student Employment Services
   - Complete the following courses with a grade of “C” or better: CHEM 1100 & 1110, IEE 1020, EDMM 2460, IEE 2610, PHYS 1150 & 1160, and MATH 1220 or 1700

5. The Manufacturing Engineering Technology curriculum requires students to complete twelve (12) Western Essential Studies (WES) courses.

First Semester (17 hours)

- **Western Essential Studies (WES) Level 2: Personal Wellness** Credits: 3 hours
- **IEE 1020 - Technical Communication** Credits: 3 hours
  (Satisfies Western Essential Studies (WES) Level 1: Writing)
- **EDMM 1420 - Engineering Graphics** Credits: 3 hours
- **EDMM 1500 - Introduction to Manufacturing** Credits: 3 hours
  (Satisfies Western Essential Studies (WES) Level 2: Science and Technology & Planetary Sustainability)
- **EDMM 1501 - Processes and Materials in Manufacturing** Credits: 1 hour
- **MATH 1180 - Precalculus Mathematics** Credits: 4 hours
  (Satisfies Western Essential Studies (WES) Level 1: Quantitative Reasoning)

Second Semester (16 hours)

- **Western Essential Studies (WES) Level 2: Societies and Cultures** Credits: 3 hours
- **CHEM 1100 - General Chemistry I** Credits: 3 hours
  (Satisfies Western Essential Studies (WES) Level 2: Laboratory Science)
- **CHEM 1110 - General Chemistry Laboratory I** Credits: 1 hour
  (Satisfies Western Essential Studies (WES) Level 2: Laboratory Science)
- **MATH 1220 - Calculus I** Credits: 4 hours
  (Satisfies Western Essential Studies (WES) Level 1: Quantitative Reasoning)

OR
- **MATH 1700 - Calculus I, Science and Engineering** Credits: 4 hours
  (Satisfies Western Essential Studies (WES) Level 1: Quantitative Reasoning)
- **PHYS 1130 - General Physics I** Credits: 4 hours
  (Satisfies Western Essential Studies (WES) Level 2: Laboratory Science)
- **PHYS 1140 - General Physics I Laboratory** Credits: 1 hour
  (Satisfies Western Essential Studies (WES) Level 2: Laboratory Science)

Third Semester (16 hours)

- **EDMM 2460 - CAD – Solid Modeling** Credits: 3 hours
- **EDMM 2540 - Machining Processes** Credits: 3 hours
- **IEE 2610 - Engineering Statistics** Credits: 3 hours
  (Satisfies Western Essential Studies (WES) Level 1: Communications)
- **EDMM 2830 - Thermodynamics** Credits: 2 hours

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- PHYS 1150 - General Physics II  Credits: 4 hours
- PHYS 1160 - General Physics II Laboratory  Credits: 1 hour

Fourth Semester (16 hours)
- EDMM 2001 - Applied Electricity/Electronics  Credits: 3 hours
- EDMM 2500 - Plastics Properties and Processing  Credits: 3 hours
- EDMM 2810 - Statics and Strength of Materials  Credits: 4 hours
- EDMM 3020 - Engineering Teams: Theory and Practice  Credits: 3 hours
- EDMM 2560 - Properties of Materials  Credits: 3 hours

OR
- ME 2500 - Materials Science for Engineers  Credits: 3 hours

Fifth Semester (18 hours)
- Approved Elective  Credits: 3 hours
- Western Essential Studies (WES) Level 1: Inquiry and Engagement: Critical Thinking in the Arts and Humanities*  Credits: 3 hours
- EDMM 3480 - Designing for Production  Credits: 3 hours
- EDMM 3520 - Metal Casting  Credits: 3 hours
- EDMM 3540 - Metrology  Credits: 3 hours
- EDMM 3840 - Fluid Mechanics and Hydraulics  Credits: 3 hours

Sixth Semester (15 hours)
- Approved Elective  Credits: 3 hours
- Western Essential Studies (WES) Level 2: World Language and Culture*  Credits: 3 hours
- EDMM 3260 - Operations Planning and Control  Credits: 3 hours
- EDMM 3280 - Quality Assurance and Control  Credits: 3 hours
- EDMM 3580 - Computer-Aided Manufacturing  Credits: 3 hours

Seventh Semester (15 hours)
- Western Essential Studies (WES) Level 2: Artistic Theory and Practice*  Credits: 3 hours
- EDMM 3200 - Engineering Cost Analysis  Credits: 3 hours
- EDMM 4540 - Fabrication, Assembly and Finishing  Credits: 3 hours
- EDMM 4580 - Manufacturing Systems Integration  Credits: 3 hours
- EDMM 4910 - Multidisciplinary Senior Proposal  Credits: 3 hours
(Satisfies Western Essential Studies (WES) Level 3: Local and National Perspectives)

Eighth Semester (15 hours)
- Approved Elective  Credits: 3 hours
- Western Essential Studies (WES) Level 3: Global Perspectives*  Credits: 3 hours
- EDMM 4020 - Engineering Leadership  Credits: 3 hours
- EDMM 4570 - Manufacturing for Sustainability  Credits: 3 hours

Revised Sept. 2018. All previous forms are obsolete and should not be used.
• **EDMM 4920 - Multidisciplinary Senior Project**  Credits: 2 hours
• **EDMM 4930 - Multidisciplinary Senior Project Consultation**  Credits: 1 hour

**NOTE:**

*At least one of these Western Essential Studies (WES) courses must fulfill the Diversity and Inclusion requirement.*

**Approved Technical Electives - MFT**

- **EDMM 2990 - Cooperative Education**  Credits: 1 to 3 hours
- **EDMM 3120 - Systems Decision Making**  Credits: 3 hours
- **EDMM 3500 - Production Thermoplastic Processing**  Credits: 3 hours
- **EDMM 4520 - Die Casting**  Credits: 3 hours
- **EDMM 4560 - Process Testing and Measurement**  Credits: 3 hours
- **EDMM 4590 - Mold Design and Construction**  Credits: 3 hours
- **EDMM 4870 - Manufacturing Productivity Techniques**  Credits: 3 hours
- **EDMM 4880 - Applied Process Reengineering**  Credits: 3 hours
- **EDMM 5500 - Advanced Plastics Processing**  Credits: 3 hours
- **EDMM 5520 - Casting Simulation and Solidification**  Credits: 3 hours
- **IEE 3420 - Ergonomics and Design**  Credits: 3 hours
- **MATH 1230 - Calculus II**  Credits: 4 hours

**OR**

- **MATH 1710 - Calculus II, Science and Engineering**  Credits: 4 hours
- **MATH 2720 - Multivariate Calculus and Matrix Algebra**  Credits: 4 hours
- **MATH 3740 - Differential Equations and Linear Algebra**  Credits: 4 hours
- **MSL 1020 - Introduction to the Profession of Arms**  Credits: 1 hour
- **MSL 2020 - Army Doctrine and Team Development**  Credits: 2 hours
- **MSL 3020 - Applied Leadership in Small Unit Operations**  Credits: 3 hours
- **MSL 4020 - Mission Command and the Company Grade Officer**  Credits: 3 hours