**Michigan Technological University**
**Minor in Systems Engineering**
Program Code ESEM, Academic Year 2021-22
Department of Engineering Fundamentals
Total Credits Required: 20

## Required Courses: 14 credits

| Course | Credits |
|---|---|
| ENG 1505 Introduction to Systems Engineering *Prereqs: none* | 1 |
| ENG 2505 Intro to Low Fidelity Systems Modeling *Prereqs: (ENG1505 and MA2160(C) and (ENG1102(C) or CS1121 or CS1131))* | 3 |
| ENG 3505 Low Fidelity Systems Modeling *Prereqs: (ENG1505 and ENG2505* | 1 |
| ENG 4300/OSM 4300Project Management *Prereqs: BUS2100 or CEE3710 or MA2720 or MA3710 or EE3180 or BE2100* | 3 |
| ENG 4505 Systems Analysis, Modeling, and Design *Prereqs: ENG3505* | 3 |
| ENG 4510 Sustainable Futures I *Prereqs: none* | 3 |

## Elective Courses: Select 6 credits from one of the following groups

### A. Environmental Engineering and Sustainability

| Course | Credits |
|---|---|
| CEE 3501 Environmental Engineering Fundamentals<br>**OR** CEE 3503 Environmental Engineering *Prereqs to either course: MA2160 and CH1112 or (CH1150 and CH1151)* | 3 |
| **AND** CEE 4506 Sustainable Engineering *Prereqs: CEE3501 or CEE3503* | 3 |

### B. Supply Chain, Logistics, Management

| Course | Credits |
|---|---|
| OSM 3150 Intro to Supply Chain Management *Prereq: OSM3000*<br>**OR** OSM 4700 Logistics and Transportation Management *Prereqs: (MA2710 or MA2720 or MA3710 or CEE3710) and (MA1135 or MA1160 or MA1161)* | 3 |
| **AND** OSM 3600 Procurement and Supply Management *Prereq: none* | 3 |

### C. Design, LEAN, and Six Sigma

| Course | Credits |
|---|---|
| MEEM 4650 Quality Engineering (3) *Prereqs: (MA3710 or MA3720 or MA2710 or MA2720) and MEEM3600(C)*<br>   **OR** OSM 4650 Six Sigma Fundamentals (3) *Prereqs: MA2710 or MA2720 or MA3710 or MA3720 or BUS2100 or CEE3710*<br>   **OR** MET 4510 Lean Manufacturing & Production Planning (3) *Prereqs: none*<br>   **OR, take all 3 credits below:**<br>    ENT 3959 Fund of Six Sigma I (1) *Prereqs: none*<br>    ENT 3967 Design for Six Sigma (1) *Prereqs: none*<br>    ENT 3982 Continuous Improvement Using LEAN Principles (1) *Prereqs: none* | 3 |
| **AND** HON 3300 Innovation through Human Centered Design (3) *Prereqs: none*<br>   **OR, select 3 credits from the following**<br>    ENT 3953 Ignite: Ideate, Innovate, Create! (1) *Prereqs: none*<br>    ENT 3958 Ethics in Engineering Design and Implementation (1) *Prereqs: ENG1101 or (ENG1001 and ENG1100)*<br>    ENT 3963 Deliver: Explore, Develop, Execute! (1) *Prereqs: none*<br>    ENT 3983 The Culture of Continuous Improvement (1) *Prereqs: none* | 3 |