

## Michigan Technological University

### Minor in Systems Engineering

Program Code ESEM, Academic Year 2023-24

College of Engineering

Total Credits Required: 20

#### Required Courses: 14 Credits

- ENG 1505 Introduction to Systems Engineering (1) *Prereqs: none*
- ENG 2505 Intro to Low Fidelity Systems Modeling (3) *Prereqs: (ENG1505 and (MA1030 or MA1031 or MA1032 or MA1120 or MA1135 or MA1160 or MA 1161 or MA2160(C)) and (ENG1102(C) or CS1121 or CS1131 or MIS2100))*
- ENG 3505 Practicum in Systems Thinking and Systems Modeling (1) *Prereqs: ENG1505 and ENG2505*
- ENG 4300/OSM 4300 Project Management (3) *Prereqs: BUS2100 or CEE3710 or MA2710 or MA2720 or MA3710 or EE3180 or BE2110*
- ENG 4505 Systems Analysis, Modeling, and Design (3) *Prereqs: ENG2505*
- ENG 4515 Introduction to Sustainability and Resilience (3) *Prereqs: none*

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

##### A. Environmental Engineering and Sustainability

###### Select 1 Course

- CEE 3501 Environmental Engineering Fundamentals (3) *Prereqs: MA2160 and CH1112 or (CH1150 and CH1151), or*
- CEE 3503 Environmental Engineering (3) *Prereqs: MA2160 and CH1112 or (CH1150 and CH1151)*

###### and select 1 course

- ENG4525 Systems Analysis for Sustainability and Resilience (3) *Prereqs: none, or*
- CEE 4506 Sustainable Engineering (3) *Prereqs: CEE3501 or CEE3503*

##### B. Supply Chain, Logistics, Management

- OSM 3600 Procurement and Supply Management (3) *Prereq: none*

###### and select 1 course

- OSM 3150 Intro to Supply Chain Management (3) *Prereq: OSM3000 (C), or*
- OSM 4700 Logistics and Transportation Management (3) *Prereqs: (MA2710 or MA2720 or MA3710 or CEE3710) and (MA1121 or MA1135 or MA1160 or MA1161)*

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

###### Select 3 credits

- MEEM 4650 Quality Engineering (3) *Prereqs: (MA3710 or MA3720 or MA2710 or MA2720) and MEEM3600(C)*
- OSM 4650 Six Sigma Fundamentals (3) *Prereqs: MA2710 or MA2720 or MA3710 or MA3720 or BUS2100 or CEE3710*
- MET 4510 Lean Manufacturing & Production Planning (3) *Prereqs: none*
- ENT 3959 Fund of Six Sigma I (1) *Prereqs: none*
- ENT 3967 Design for Six Sigma (1) *Prereqs: none*
- ENT 3982 Continuous Improvement Using LEAN Principles (1) *Prereqs: none*

###### and select 3 credits

- HON 3300 Innovation through Human Centered Design (3) *Prereqs: none*
- ENT 3953 Ignite: Ideate, Innovate, Create! (1) *Prereqs: none*
- ENT 3958 Ethics in Engineering Design and Implementation (1) *Prereqs: ENG1101 or (ENG1001 and ENG1100)*
- ENT 3963 Deliver: Explore, Develop, Execute! (1) *Prereqs: none*
- ENT 3983 The Culture of Continuous Improvement (1) *Prereqs: none*