2017-18 BSE with Systems Engineering

This is not an official list of degree requirements. Adjustments may be required due to curriculum changes.
See back of academic plan for more information on requirements for elective courses.

**Key**
- XX#:# = Prerequisite
- XX#:#(C) = prereq that can be taken concurrently
- F = Fall
- S = Spring
- Su = Summer

**Fall Year 1**
- MA1160 (4) or MA1161 (5)
  - CALCULUS I
  - F, S, Su
- MA2160 (4)
  - CALCULUS II
  - F, S, Su
- CH1150 (3)
  - UNIVERSITY CHEMISTRY
  - F, S, Su
- ENG1101 (3) or ENG1001 (2) & ENG1100 (2)
  - ENG. ANALYSIS & PROB. SOLVING
  - F, S, Su
- UN1015 (3)
  - COMPOSITION
  - F, S, Su

**Spring Year 1**
- MA1160/1
  - CALCULUS I
  - F, S, Su
- MA2160/1
  - CALCULUS II
  - F, S, Su
- CH1150/1
  - UNIVERSITY CHEMISTRY
  - F, S, Su
- ENG1102 (3)
  - ENG. MODELING & DESIGN
  - F, S, Su
- ENG1505 (1)
  - INTRO TO SYSTEMS ENG
  - S

**Fall Year 2**
- MA1160/1
  - CALCULUS I
  - F, S, Su
- MA2160/1
  - CALCULUS II
  - F, S, Su
- CH1150/1
  - UNIVERSITY CHEMISTRY
  - F, S, Su
- ENG1102 (3)
  - ENG. MODELING & DESIGN
  - F, S, Su
- ENG1505 (1)
  - INTRO TO SYSTEMS ENG
  - S

**Spring Year 2**
- MA1160/1
  - CALCULUS I
  - F, S, Su
- MA2160/1
  - CALCULUS II
  - F, S, Su
- CH1150/1
  - UNIVERSITY CHEMISTRY
  - F, S, Su
- ENG1102 (3)
  - ENG. MODELING & DESIGN
  - F, S, Su
- ENG1505 (1)
  - INTRO TO SYSTEMS ENG
  - S

**Fall Year 3**
- MA2160 (4)
  - CALCULUS II
  - F, S, Su
- EC2001 (3)
  - PRINCIPLES OF ECONOMICS
  - F, S, Su
- ENG1505 (1)
  - INTRO TO SYSTEMS ENG
  - S
- ENG2120 (4)
  - STATICS- STRENGTH MAT'LS
  - S

**Spring Year 3**
- MA2160 (4)
  - CALCULUS II
  - F, S, Su
- EC2001 (3)
  - PRINCIPLES OF ECONOMICS
  - F, S, Su
- ENG1505 (1)
  - INTRO TO SYSTEMS ENG
  - S
- ENG2120 (4)
  - STATICS- STRENGTH MAT'LS
  - S

**Fall Year 4**
- MA2160 (4)
  - CALCULUS II
  - F, S, Su
- EC2001 (3)
  - PRINCIPLES OF ECONOMICS
  - F, S, Su
- ENG1505 (1)
  - INTRO TO SYSTEMS ENG
  - S
- ENG2120 (4)
  - STATICS- STRENGTH MAT'LS
  - S

**Spring Year 4**
- ENG4105 (3)
  - SUSTAINABLE FUTURES I
  - F
- ENG4105 (3)
  - SUSTAINABLE FUTURES I
  - F
- ENG4300 (3)
  - ENGINEERING SYSTEMS ANALYSIS
  - S
- ENG44505 (3)
  - SYSTEMS ANALYSIS
  - Modeling & Design
  - F
- ENG4905 (3)
  - SR DESIGN
  - F, S

**Summer Year 4**
- FW4260 (3) or FW3410 (3)
  - POPULATION ECO OR CONCERVATION BIO
  - F, S

**Electives**
- ENG1002 (C) or ENG1001 (C)
  - PRINCIPLES OF ENGINEERING PROJECT MANAGEMENT
  - Summer (on-line)

**Honors Courses**
- FW4260 (3) or FW3410 (3)
  - POPULATION ECO OR CONCERVATION BIO
  - F, S

**Social Res & Ethical Reasoning**
- UN1015 or UN1025 MAY BE TAKEN IN EITHER ORDER IN THE FIRST YEAR.

**Second Year Core**
- **HASS Requirement**
  - 3 credits must be upper division 3000-4000 level
  - UN1015 & UN1025 are prerequisites for all upper division HASS courses
  - HASS course may be taken in any order.
BSE Systems Emphasis 2017-18
(minimum of 131 credits)

Academic questions: E-mail efadvise@mtu.edu

1 Senior Design Ready:
   a. Senior Design Prerequisite courses:
      EE3010, ENG1101, ENG1102, ENG2120, ENG3200, ENG4505, MY2100.
   b. Core Competency Check test - Take and pass the test; test topics include all ENG4905 prerequisite courses except ENG4505.

2 General Education Requirements (24 credits + 3 PE units):

I. Core Courses (12 credits)
   ___ UN1015 Composition
   ___ UN1025 Global Issues or 3000+ Modern Language
   ___ Critical/Creative Think List
   ___ Social Resp./Ethical Reason List

II. HASS Courses Requirements (12 credits)
   (www.admin.mtu.edu/em/documents/HASS Distribution List.pdf)
   - 6 credits upper level (3000- 4999)
   - 3 credits from each listed below
     ___ Communication/Composition
     ___ Humanities/Fine Arts List (HU/FA)
     ___ Social & Behavioral Science List (EC/PSY/SS)
     ___ 3 credits from any list

* Either EC2001 or EC3400 is required by the degree, if both are taken only ONE may be counted as a Social Resp./Ethical Reason or HASS course. If one is taken it may NOT be counted as a Social Resp./Ethical Reason or HASS course.

III. Co-curricular activities (3 units)
In the co-curricular requirement, the three semester units will be physical education activities. These units are required for graduation, but are not included in the calculation of the GPA, nor in the overall degree-credit requirement. Note: most physical education activities will last for 7 ½ weeks or ½ semester. A student would need six of these ½-semester units to fulfill the 3-semester unit co-curricular requirement.

PE__________ PE__________ PE__________
PE__________ PE__________ PE__________

3 *DRAFT* Systems Minor Requirements (20 credits) *DRAFT*:

Required courses (14 credits)
___ ENG1505 (1) Introduction to Systems Engineering
___ ENG2505 (3) Low Fidelity Systems Modeling
___ ENG3505 (1) Modeling Laboratory for Sustainable Systems
___ ENG4300 (3) Engineering Project Management
___ ENG4505 (3) Systems Analysis, Modeling, and Design
___ ENG4510 (3) Sustainable Futures I

Select 6 credits from one of the following groups (6 credits)
A. ___ CEE3501 OR CEE3503 (3) Environmental Engineering AND
   ___ CEE4506 (3) App of Sustainability Principles to Eng Practice
B. ___ OSM3150 Intro to Supply Chain Mgmt OR OSM4700 Logistics & Transportation Mgmt (3) AND
   ___ OSM3600 (3) Procurement and Supply Management

4 Systems Focus (Directed) Electives (12 credits):
Select 12 credits from one of the following groups.

Enterprise (12 credits)
___ ENT3950 (1) Enterprise Project Work III
___ ENT3960 (1) Enterprise Project Work IV
___ ENT4950 (2) Enterprise Project Work V Capstone
___ ENT4960 (2) Enterprise Project Work VI Capstone
___ ENT2961 (2) Teaming in the Enterprise
___ ENT2962 (1) Communication Contexts
___ ENT3984 (3) Lean Six Sigma Principles OR
   ___ ENT3959 (1) Fundamentals of Six Sigma I AND
   ___ ENT3967 (1) Design for Six Sigma AND
   ___ ENT3982 (1) Continuous Improvement Using Lean Principles

Minor (12 credits): Select 12 credits in a coherent plan of study as partial fulfillment of a university minor, with BSE program approval.