## 2.5 YEAR MS & MSE PLAN

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
<th>Course #</th>
<th>Credits</th>
<th>Term</th>
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<tr>
<td><strong>Engineering</strong></td>
<td>Required Courses:</td>
<td>ME 589</td>
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<tr>
<td><strong>Mechanical Engineering Core</strong></td>
<td>At least one course from Mechanical Engineering course list (next page)</td>
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<tr>
<td><strong>School for Environment and Sustainability</strong></td>
<td>*ME option:</td>
<td>ME 455</td>
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<tr>
<td><strong>SS Core</strong></td>
<td>• Coursework Only</td>
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<tr>
<td><strong>EAS Core</strong></td>
<td>Required Course:</td>
<td>EAS 557</td>
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<tr>
<td><strong>Analytics</strong></td>
<td>EAS 538 or equivalent required</td>
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<tr>
<td><strong>Opus</strong></td>
<td>Master’s Project/Thesis/Practicum</td>
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<td><strong>TOTALS</strong></td>
<td>“EAS” - Minimum 25CR</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td>“ME” - Minimum 18CR</td>
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### Notes
- **ME 589**
- **ME 455**
- See List A2 for acceptable courses
- See List A3 for acceptable courses
- See attached list (A1-3) of acceptable courses in these specializations

### Minimum Credit Hours by School
- **EAS** - Minimum 25CR
- **ME** - Minimum 18CR

Minimum 54 Credit Hours
Mechanical Engineering

MECHENG 555 (3) Design Optimization (W)
MECHENG 577 (3) Materials in Manufacturing and Design (W)
MECHENG 581 (3) Global Product Development
MECHENG 587 (3) Global Manufacturing (F)

A) Sustainable Systems Core (1-3)

1) Systems Analysis for Sustainability (at least 6CR*)

EAS 573 (3cr)
EAS 597 (3cr)
EAS 610 (1.5cr)
EAS 557/CEE 586 (3cr)
EAS 550/STRAT 566 (3cr)

*At least two courses need to be from the courses listed above

EAS 570 (3cr)
EAS 501 (1.5cr)
EAS 531 (4cr)

2) Sustainable Design & Technology (3CR)

EAS 537 (3cr)
EAS 501.087 (3CR)
EAS 615 (3CR)
EAS 574/PUBPOL 519 (3cr)
EAS 605/BA 605 (3cr)
EAS 677.023 (2cr)
EAS 687 (4cr)
ARCH 575 (3cr)
CEE 460 (3cr)
CEE 582 (3cr)
CEE 686/ChE 686 (2-3cr)
MECHENG 589 (3cr)

3) Sustainable Enterprise (3CR)

EAS 530 (3cr)
EAS 576/CEE 6588/ChE 590 (3cr)
EAS 525 (3cr)
EAS 535/LHC 536 (2.25)
EAS 512/STRAT 564 (1.5)
EAS 513/STRAT 565 (1.5)
EAS 527/BE 527 (3cr)
EAS 533 (3cr)
EAS 595/TO 560
BE 555 (1.5)
EAS 560/UP 560 (3cr)
ENGR 521 (3cr)
FIN 637 (2.25cr)
FIN 583 (1.5cr)

B) Sustainable Systems Electives

B1) Additional SS courses (can count towards Non-Opus option)

EAS 572(2cr)
EAS 523(3cr)
EHS 672 (3cr)
EAS 686/HMP 686/PubPol 563 (3cr)
EAS 552 (3cr)
BA 612 (2.25cr)
ESENG 501 (3cr)
Econ 437 (3cr)
UP 533/ARCH 506 (3cr)

Environmental Impact Assessment (F)
Environmental Risk Assessment (W)
Life Cycle Assessment: Human Health & Environ Impacts (F)
Environmental Policy (W)
Ecosystem Services
Strategies for the Base of the Pyramid (F)
Seminars in Energy Science, Technology, and Policy (F)
Energy Economics & Policy (W)
Sustainable Urbanism and Architecture (F)
B2) Sustainable Systems Themes:

- Energy Systems
- Mobility Systems
- Water Systems
- Food Systems
- Built Environment
- Climate Change

Integrated Analytic Methods and Skills Requirement

Students are required, at some point during their time enrolled in the program, to take 2 courses composing at least 3 credits from a faculty-approved list of courses that focus on integrative analytic methods and skills. The faculty-approved existing courses that satisfy this requirement are listed below:

Fall

447 – Forest Ecology Management
501 – Ecological Restoration Applications
523 – Ecological Risk Assessment
530 - Decision-Making for Sustainability
531 – Principles of GIS
533 – Negotiation Skills
536 – Mediation Skills
552 – Ecosystem Services
553 – Diverse Farming Systems
564 – Localization Seminar
567 – Social Vulnerability & Adaptation to Environ Change
572 – Environmental Impact Assessment
570 – Environmental Economics
576 – Sustainability Finance
578 – Urban Stormwater
577 – Environmental Systems Analysis
677 – Climate Adaptation Seminar
687 – Landscape Planning

Winter

501 – Science and Management of the Great Lakes
501 – The Hydrologic Cycle and Water Res Mgmt
501 – Climate Economics & Policy
541 – Remote Sensing
545- Applied Ecosystem Modeling (Winter B)
549 – Analysis and Modeling of Ecological Data
550 – Systems Thinking for Sustainable Development
557 – Industrial Ecology
569 – Stakeholder Network Analysis
581 – Advanced Education for Environment and Sustainability
589 – Ecological Restoration
610 – Advanced LCA Methods and Software Tools
641 – Interdisciplinary Research Methods
787 – Metro Studio (MLA only)