<table>
<thead>
<tr>
<th>2 Year MS &amp; MSE Plan</th>
<th>Requirement*</th>
<th>Notes</th>
<th>Course #</th>
<th>Credits</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environmental Engineering Core</strong></td>
<td>18CR from the Civil and Environmental Engineering Department</td>
<td>Required: CEE 881, CEE 581, CEE 582, CEE 591, CEE 881 (1st Fall in program)</td>
<td>CEE 881</td>
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<td></td>
<td>12CR from within one of the following Environmental Engineering Majors: (courses on next page)</td>
<td>Choose one: A) Ecohydrology B) Water Quality Process Engineering C) Water Quality and Resources Engineering</td>
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<td></td>
<td>3CR of approved Mathematics</td>
<td>See Env. Eng. dept. requirements and Cognates (3rd page)</td>
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<tr>
<td><strong>SS CORE</strong></td>
<td>6CR in Systems Analysis for Sustainability</td>
<td>Required: NRE 557/CEE 586 And one course from List A1 (3rd page)</td>
<td>NRE 557</td>
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<td></td>
<td>9CR total</td>
<td>Sustainable Design &amp; Technology Minimum 3CR</td>
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<td></td>
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<td>Required: See List A2 for acceptable courses (3rd page)</td>
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<td></td>
<td>Sustainable Enterprise Minimum 3CR</td>
<td>See List A3 for acceptable courses (3rd page)</td>
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<td></td>
<td>Additional 3CR minimum from list A1, 2, or 3</td>
<td>See attached list (A1-3) of acceptable courses in these specializations</td>
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<tr>
<td><strong>NRE Core</strong></td>
<td>NRE 509 NRE 510</td>
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<td></td>
<td>IAMs Requirement Two courses; 3CR minimum Please see page 3 for approved courses</td>
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<tr>
<td><strong>Analytics</strong></td>
<td>3CR in Analytics</td>
<td>NRE 538 or equivalent required</td>
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<tr>
<td><strong>Opus</strong></td>
<td>Students are not expected to complete an Opus, but could petition to do a thesis/practicum or project</td>
<td>At most 6CR of NRE 700/701</td>
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<tr>
<td><strong>Cognates</strong> (Backham)</td>
<td></td>
<td>Please see 3rd page for cognate requirement information</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td>MINIMUM CREDIT HOURS BY SCHOOL</td>
<td>“NRE” – Minimum 25CR “CEE” – Minimum 18CR</td>
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<td>TOTAL CREDIT HOURS</td>
<td>Minimum 54 Credit Hours</td>
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*Any waiver or substitution of degree requirement must be approved by the appropriate faculty and submitted to OAP
Environmental Engineering
A) Ecohydrology
Choose four:
CEE 428 – Introduction to Groundwater Hydrology
CEE 520 – Deterministic & Stochastic Models in Hydrology
CEE 521 – Open Channel Flow
CEE 522 – Sediment Transport
CEE 524 – Environmental Turbulence
or
CEE 525 – Turbulent Mixing in Buoyant Flows
CEE 527 – Coastal Hydraulics
CEE 590 – Stream, Lake, and Estuary Analysis
CEE 593 – Environmental Soil Physics
CEE 624 – Restoration Fundamentals & Practice in Aquatic Systems

B) Water Quality Process Engineering
Required:
CEE 580 – Physical Chemical Processes in Environmental Engineering
CEE 592 – Biological Processes in Environmental Engineering
Choose two:
CEE 428 – Introduction to Groundwater Hydrology
CEE 583 – Surface & Interfaces in Aquatic Systems
CEE 593 – Environmental Soil Physics
CEE 594 – Environmental Soil Chemistry
CEE 693 – Environmental Molecular Biology
Approved CHEM or BIOLCHEM or ChE or AOSS elective

Choose at least one:
CEE 521 – Open Channel Flow
CEE 522 – Sediment Transport
Choose at least one:
CEE 580 – Physical Chemical Processes in Environmental Engineering
CEE 592 – Biological Processes in Environmental Engineering
Choose up to two (only one of CEE 524 or CEE 525 may be taken):
CEE 428 – Introduction to Groundwater Hydrology
CEE 520 – Deterministic and Stochastic Models in Hydrology
CEE 524 – Environmental Turbulence
or
CEE 525 – Turbulent Mixing in Buoyant Flows
CEE 526 – Design of Hydraulic Systems
CEE 624 – Restoration Fundamentals & Practice in Aquatic Systems

Natural Resources and Environment
Sustainable Systems

A) Sustainable Systems Core (1-3)
1) Systems Analysis for Sustainability (at least 6CR*)
NRE 501.036 (3cr) Consumption, Trade, and Environ Input-Output Analysis
NRE 597 (3cr) Environmental Systems Analysis (F)
NRE 557/CEE 586 (3cr) Industrial Ecology (W)
NRE 550/STRAT 566 (3cr) Systems Thinking for Sustainable Development (W)
*At least two courses need to be from the courses listed above
NRE 570 (1.5cr) Environ Economics: Quantitative Methods & Tools (WN A)
NRE 501 (1.5cr) Five courses on selected topics in Env. Economics (FA B &
WN A&B)
NRE 531 (4cr) Principles of GIS (W)

Last Revised  07/14/2014
2) **Sustainable Design & Technology (3CR)**

NRE 501.037 (3cr)  
NRE 501.091 (3cr)  
NRE 574/PUBPOL 519 (3cr)  
NRE 501.039 (3cr)  
NRE 576/UP 576 (3cr)  
Redevelopment (F)  
NRE 605/BA 605 (3cr)  
NRE 687 (4cr)  
ARCH 575 (3cr)  
CEE 460 (3cr)  
CEE 582 (3cr)  
CEE 686/ChE 686 (2-3cr)  
MECHENG 589 (3cr)

**Urban Sustainability (F)**

**Renewable Electricity and the Grid 9F**

**Sustainable Energy Systems (F)**

**Land Use and Global Change (F)**

**Ecological Design Approaches to Brownfield Redevelopment (F)**

**Green Development (W)**

**Landscape Planning (F)**

**Building Ecology (F)**

**Design of Environ Engineering Systems (F)**

**Environmental Microbiology (F)**

**Case Studies in Environ Sustainability (W)**

**Sustainable Design of Technology Systems (F)**

3) **Sustainable Enterprise (3CR)**

NRE 567 (3cr)  
NRE 512/LHC 536 (2.25)  
NRE 513/STRAT 564&564 (3cr)  
NRE 527/BE 527 (3cr)  
NRE 532 (3cr)  
NRE 533 (3cr)  
BE 555 (1.5)  
NRE 560/UP 560 (3cr)  
ENGR 521 (3cr)  
ES 520 (1.5cr)  
FIN 637 (2.25cr)  
FIN 583 (1.5cr)  
STRAT 735-739 (1.5cr)

**Transportation Energy & Climate (W)**

**Ethics Corporate Management (F or W)**

**Strategies for Sustainable Development (F)**

**Energy Markets and Energy Politics (F)**

**Natural Resources and Environ Conflict Management (F)**

**Negotiation Skills (F)**

**Non Market Strategy (F)**

**Behavior and Environment (F)**

**CleanTech Entrepreneurship (F)**

**CleanTech Venture Opportunities (F)**

**Finance and Sustainable Enterprises (F)**

**Energy Project Finance (W)**

**Topics in Global Sustainable Enterprise (F)**

B) **Sustainable Systems Electives**

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

NRE 514 (2cr)  
NRE 523 (3cr)  
EHS 672 (3cr)  
( F )  
NRE 558/CEE 587 (3cr)  
NRE 686/PUBPOL 563 (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**

**Water Resource Policy (TBD)**

**Environmental Policy (W)**

**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)**

**Cognates**

SNRE – Minimum 4 credits outside SNRE. Can be fulfilled with CEE coursework.

CEE – 4 credits of non-CEE coursework. Can be fulfilled with one advanced Mathematics course (proper choice of SNRE analytical courses can also satisfy this requirement) and one SNRE course.

Last Revised 07/14/2014