<table>
<thead>
<tr>
<th>FALL</th>
<th>SPRING</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 5010 Introduction to GIS</td>
<td>CE 6030 Green Engineering and Sustainability</td>
</tr>
<tr>
<td>CE XXXX ISE Core (1)</td>
<td>CE XXXX ISE Core (1)</td>
</tr>
<tr>
<td>CE XXXX ISE Core (1)</td>
<td>CE XXXX ISE Core (1)</td>
</tr>
<tr>
<td>SRRM Elective (2)</td>
<td>SRRM Elective (2)</td>
</tr>
<tr>
<td>Technical Elective (3)</td>
<td>Technical Elective (3)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

(1) IS Core – Students must select four courses from the following lists or as approved by the student’s advisor. To ensure suitable breadth of knowledge, students must take at least one course from each group; that is, not all four courses can be from either Group A or Group B.

**Group A – Environmental and Water Resources Engineering**

- CE 6200 Fate and Transport Modeling of Ecosystems
- CE 6220 Water Chemistry
- CE 6230 Hydrology
- CE 6240 Groundwater Hydrology and Contaminant Transport
- CE 6260 Environmental Microbiology and Biological Waste Treatment
- SYS 6070 Environmental Systems Processes

**Group B – Transportation Engineering**

- CE 5000 Large-Scale Construction Project Management
- CE 5400 Traffic Operations
- CE 6410 Introduction to Transportation Planning
- CE 6420 Public Transportation
- CE 6430 Intermodal Transportation
- CE 6440 Intelligent Transportation Systems
- CE 6450 Transportation Safety Design
- CE 6460 Introduction to Integrated Transportation Systems Models
- CE 6470 Transportation Economics
- CE 6480 Advanced Geometric Design

(2) Sustainability, Resilience, Risk, and Modeling of Infrastructure Systems (SRRM) Electives – chosen from the following or as approved by the student’s advisor:

- CE 6010 Computational Modeling in Civil Engineering
- CE 6250 Environmental Systems Modeling and Management
- CE 6490 Transportation Data Analysis and Modeling
- CE 6500 Transportation Sustainability
- ARCH 5150 Global Sustainability
- SYS 5044 Economics of Engineering
- SYS 6050 Risk Analysis
- PLAN 5620 Sustainable and Adaptive Infrastructure
- PLAN 5740 Transportation Policy and Planning
- PLAN 5830 Environmental Policy and Planning
(3) Technical Electives – chosen from any course at or above the 5xxx level in APMA, SEAS, PLAN, or EVSC. Or any technical course as approved by the CEE Chair of Graduate Studies.

(4) Pre-requisites: college math through Ordinary Differential Equations, college physics, and college chemistry; plus, Introduction to Environmental Engineering (CE 2100 or equivalent), Introduction to Geotechnical Engineering (CE 3710 or equivalent), and Transportation Infrastructure Design (CE 3400).

(5) Students may be permitted to modify this framework, pending approval of their academic advisor and the CEE Director of Graduate Studies.