# Master of Science in Environmental Engineering with Specialization in Energy/Environment/Economics (E3)

## Curriculum

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Courses</td>
<td>(24)</td>
</tr>
<tr>
<td>CAE 523</td>
<td>Statistical Analysis of Engineering Data</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 501</td>
<td>Environmental Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 506</td>
<td>Chemodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 542</td>
<td>Physiochemical Processes in Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 580</td>
<td>Hazardous Waste Engineering</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select one E3 course from Group A</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Select two E3 courses from Group B</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Elective Courses</td>
<td>(0-2)</td>
</tr>
<tr>
<td></td>
<td>Select zero to two credit hours</td>
<td>0-2</td>
</tr>
<tr>
<td></td>
<td>Thesis Research</td>
<td>(6-8)</td>
</tr>
<tr>
<td>ENVE 591</td>
<td>Research and Thesis M.S.</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Minimum degree credits required: 32

1 In addition to the listed E3 Group B course options, Master of Science in Environmental Engineering students may select CAE 589 as a Group B course option.

Students may apply up to two 400-level courses to the M.S. degree requirements with their adviser’s approval.

## E3 Courses

See descriptions under the respective department’s course listings.

### Group A

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 503</td>
<td>Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>CHE 536</td>
<td>Computational Techniques in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHE 541</td>
<td>Renewable Energy Technologies</td>
<td>3</td>
</tr>
<tr>
<td>CHE 542</td>
<td>Fluidization and Gas-Solids Flow Systems</td>
<td>3</td>
</tr>
<tr>
<td>CHE 565</td>
<td>Fundamentals of Electrochemistry</td>
<td>3</td>
</tr>
<tr>
<td>ECE 550</td>
<td>Power Electronic Dynamics and Control</td>
<td>3</td>
</tr>
<tr>
<td>ECE 551</td>
<td>Advanced Power Electronics</td>
<td>3</td>
</tr>
<tr>
<td>ECE 552</td>
<td>Adjustable Speed Drives</td>
<td>3</td>
</tr>
<tr>
<td>ECE 553</td>
<td>Power System Planning</td>
<td>3</td>
</tr>
<tr>
<td>ECE 554</td>
<td>Power System Relaying</td>
<td>3</td>
</tr>
<tr>
<td>ECE 555</td>
<td>Power Market Operations</td>
<td>3</td>
</tr>
<tr>
<td>ECE 557</td>
<td>Fault-Tolerant Power Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECE 558</td>
<td>Power System Reliability</td>
<td>3</td>
</tr>
<tr>
<td>ECE 559</td>
<td>High Voltage Power Transmission</td>
<td>3</td>
</tr>
<tr>
<td>ECE 560</td>
<td>Power Systems Dynamics and Stability</td>
<td>3</td>
</tr>
<tr>
<td>ECE 561</td>
<td>Deregulated Power Systems</td>
<td>3</td>
</tr>
<tr>
<td>ECE 562</td>
<td>Power System Transaction Management</td>
<td>3</td>
</tr>
<tr>
<td>ECE 563</td>
<td>Computational Intelligence in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ECE 564</td>
<td>Control and Operation of Electric Power Systems</td>
<td>3</td>
</tr>
<tr>
<td>MMAE 517</td>
<td>Computational Fluid Dynamics</td>
<td>3</td>
</tr>
<tr>
<td>MMAE 520</td>
<td>Advanced Thermodynamics</td>
<td>3</td>
</tr>
</tbody>
</table>
MMAE 522  Nuclear, Fossil-Fuel, and Sustainable Energy Systems  3
MMAE 523  Fundamentals of Power Generation  3
MMAE 524  Fundamentals of Combustion  3
MMAE 525  Fundamentals of Heat Transfer  3
MMAE 526  Heat Transfer: Conduction  3
MMAE 527  Heat Transfer: Convection and Radiation  3

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 541</td>
<td>Renewable Energy Technologies</td>
<td>3</td>
</tr>
<tr>
<td>CHE 560</td>
<td>Statistical Quality and Process Control</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 501</td>
<td>Environmental Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 506</td>
<td>Chemodynamics</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 542</td>
<td>Physiochemical Processes in Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 551</td>
<td>Industrial Waste Treatment</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 561</td>
<td>Design of Environmental Engineering Processes</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 570</td>
<td>Air Pollution Meteorology</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 577</td>
<td>Design of Air Pollution Control Devices</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 578</td>
<td>Physical and Chemical Processes for Industrial Gas Cleaning</td>
<td>3</td>
</tr>
<tr>
<td>ENVE 580</td>
<td>Hazardous Waste Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>