ESE Curriculum (2017 Cohort - Normative 4-year Degree)
[min. no. of CUs for the award: 121]

(1) Gateway Education (GE) Requirement (30 CUs)

<table>
<thead>
<tr>
<th>GE Requirement</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Requirements</td>
<td></td>
</tr>
<tr>
<td>GE1401 University English</td>
<td>3</td>
</tr>
<tr>
<td>GE2401 / English for Science / GE2410 English for Engineering</td>
<td>3</td>
</tr>
<tr>
<td>GE1501 Chinese Civilisation – History and Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>Distributional Requirements</td>
<td>12</td>
</tr>
<tr>
<td>A minimum of 3 credit units from each of the three distributional areas below:</td>
<td></td>
</tr>
<tr>
<td>- Area 1: Arts and Humanities</td>
<td></td>
</tr>
<tr>
<td>- Area 2: Study of Societies, Social and Business Organisations</td>
<td></td>
</tr>
<tr>
<td>- Area 3: Science and Technology</td>
<td></td>
</tr>
<tr>
<td>School-specified Requirements</td>
<td></td>
</tr>
<tr>
<td>MBE2016 Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>SEE1003 Introduction to Sustainable Energy and Environmental Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SEE3002 Energy and Environmental Economics</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

(2) School Requirement (18 CUs)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Units</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>AP1201 General Physics I</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BCH1100 Chemistry</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BCH1200 Discovery in Biology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MA1200 / MA1300 Calculus and Basic Linear Algebra I / Enhanced Calculus and Linear Algebra I</td>
<td>3</td>
<td>Select either MA1200 or MA1300</td>
</tr>
<tr>
<td>MA1201 / MA1301 Calculus and Basic Linear Algebra II / Enhanced Calculus and Linear Algebra II</td>
<td>3</td>
<td>Select either MA1201 or MA1301</td>
</tr>
<tr>
<td>SEE1002 Introduction to Computing for Energy and Environment</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

(3) Major Requirement (73 CUs)

A. Basic Core Courses (19 CUs)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA2181 Mathematical Methods for Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SEE2001 Electromagnetic Principles for Energy Engineers</td>
<td>3</td>
</tr>
<tr>
<td>SEE2002 Chemical Sciences for Energy and Environmental Engineers</td>
<td>4</td>
</tr>
<tr>
<td>SEE2003 Introduction to Energy and Environmental Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SEE2101 Engineering Thermofluids I</td>
<td>3</td>
</tr>
<tr>
<td>SEE2201 Fundamentals of Environmental Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>
### B. Major Core Courses (42 CUs)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEEM4024</td>
<td>3</td>
</tr>
<tr>
<td>SEE3001</td>
<td>3</td>
</tr>
<tr>
<td>SEE3003</td>
<td>3</td>
</tr>
<tr>
<td>SEE3101</td>
<td>4</td>
</tr>
<tr>
<td>SEE3102</td>
<td>3</td>
</tr>
<tr>
<td>SEE3103</td>
<td>3</td>
</tr>
<tr>
<td>SEE3104</td>
<td>3</td>
</tr>
<tr>
<td>SEE4001</td>
<td>1</td>
</tr>
<tr>
<td>SEE4003</td>
<td>3</td>
</tr>
<tr>
<td>SEE4004</td>
<td>4</td>
</tr>
<tr>
<td>SEE4112</td>
<td>3</td>
</tr>
<tr>
<td>SEE4217</td>
<td>3</td>
</tr>
<tr>
<td>SEE4997</td>
<td>6</td>
</tr>
</tbody>
</table>

### C. Electives (12 CUs) - *select at least FOUR courses from the following list*

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Units</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEE4111 Nuclear Energy Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4113 Nanotechnology in Energy Conversion and</td>
<td>3</td>
<td>Select at least three from Courses SEE4111, SEE4113, SEE4114, SEE4115,</td>
</tr>
<tr>
<td>Storage: Concepts and Creative Science</td>
<td></td>
<td>SEE4116, SEE4117, SEE4118, SEE4119, SEE4120 and SEE4121</td>
</tr>
<tr>
<td>SEE4114 Bioenergy Engineering: Principles and</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEE4115 Energy Catalysis and Reaction Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4116 Energy and Carbon Auditing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4117 Solar Energy Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4118 Wind and Marine Energy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4119 Electrical Energy Conversion</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4120 Materials Engineering for Energy Storage</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEE4121 Gas Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE3201 Atmospheric Science – An Introductory Survey</td>
<td>3</td>
<td>Select at least one from Courses SEE3201, SEE4202, SEE4205, SEE4216</td>
</tr>
<tr>
<td>SEE4202 Atmospheric Chemistry</td>
<td>3</td>
<td>and SEE4218</td>
</tr>
<tr>
<td>SEE4205 Design of Smart Cities and Sustainable</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Building</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEE4216 Combustion and Air Pollution Control</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4218 Water and Water Resource Engineering</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
### (1) Gateway Education (GE) Requirement (21 CUs)

<table>
<thead>
<tr>
<th>GE Requirement</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>University Requirements</td>
<td></td>
</tr>
<tr>
<td>GE1401 University English</td>
<td>3</td>
</tr>
<tr>
<td>GE2401 / English for Science / GE2410</td>
<td>3</td>
</tr>
<tr>
<td>GE1501 Chinese Civilisation – History and Philosophy</td>
<td>3</td>
</tr>
<tr>
<td>Distributional Requirements</td>
<td></td>
</tr>
<tr>
<td>A minimum of 6 credit units from two of the three distributional areas below:</td>
<td>6</td>
</tr>
<tr>
<td>- Area 1: Arts and Humanities</td>
<td></td>
</tr>
<tr>
<td>- Area 2: Study of Societies, Social and Business Organisations</td>
<td></td>
</tr>
<tr>
<td>- Area 3: Science and Technology</td>
<td></td>
</tr>
<tr>
<td>School-specified Requirements</td>
<td></td>
</tr>
<tr>
<td>MBE2016 Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>SEE3002 Energy and Environmental Economics</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>

### (2) School Requirement (Not required)

### (3) Major Requirement (70 CUs)

#### A. Basic Core Courses (16 CUs)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA2181 Mathematical Methods for Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SEE2001 Electromagnetic Principles for Energy Engineers</td>
<td>3</td>
</tr>
<tr>
<td>SEE2002 Chemical Sciences for Energy and Environmental Engineers</td>
<td>4</td>
</tr>
<tr>
<td>SEE2101 Engineering Thermofluids I</td>
<td>3</td>
</tr>
<tr>
<td>SEE2201 Fundamentals of Environmental Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>
### B. Major Core Courses (42 CUs)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEE4024 Project Management</td>
<td>3</td>
</tr>
<tr>
<td>SEE3001 Energy and Environmental Policy</td>
<td>3</td>
</tr>
<tr>
<td>SEE3003 Climate Change and Adaptation Strategies</td>
<td>3</td>
</tr>
<tr>
<td>SEE3101 Engineering Thermofluids II</td>
<td>4</td>
</tr>
<tr>
<td>SEE3102 Power Plant Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SEE3103 Energy Efficiency for Buildings</td>
<td>3</td>
</tr>
<tr>
<td>SEE3104 Sustainable and Renewable Energy</td>
<td>3</td>
</tr>
<tr>
<td>SEE4001 Engineers in Society</td>
<td>1</td>
</tr>
<tr>
<td>SEE4003 Energy and Environmental Engineering Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>SEE4004 Environmental Impact Assessment for Sustainable Development</td>
<td>4</td>
</tr>
<tr>
<td>SEE4112 Sustainable Engineering Systems: Modelling and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>SEE4217 Waste and Wastewater Treatment Engineering</td>
<td>3</td>
</tr>
<tr>
<td>SEE4997 Final Year Project</td>
<td>6</td>
</tr>
</tbody>
</table>

### C. Electives (12 CUs) - select at least FOUR courses from the following list

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Units</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEE4111 Nuclear Energy Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4113 Nanotechnology in Energy Conversion and Storage: Concepts and Creative Science</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4114 Bioenergy Engineering: Principles and Applications</td>
<td>3</td>
<td>Select at least three from Courses SEE4111, SEE4113, SEE4114, SEE4115, SEE4116, SEE4117, SEE4118, SEE4119, SEE4120 and SEE4121</td>
</tr>
<tr>
<td>SEE4115 Energy Catalysis and Reaction Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4116 Energy and Carbon Auditing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4117 Solar Energy Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4118 Wind and Marine Energy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4119 Electrical Energy Conversion</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4120 Materials Engineering for Energy Storage Applications</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4121 Gas Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE3201 Atmospheric Science – An Introductory Survey</td>
<td>3</td>
<td>Select at least one from Courses SEE3201, SEE4202, SEE4205, SEE4216 and SEE4218</td>
</tr>
<tr>
<td>SEE4202 Atmospheric Chemistry</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4205 Design of Smart Cities and Sustainable Building</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4216 Combustion and Air Pollution Control</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>SEE4218 Water and Water Resource Engineering</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>