<table>
<thead>
<tr>
<th>Course #</th>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 101</td>
<td>Freshman Composition I</td>
<td>3</td>
<td>Placement</td>
<td>FA/SP/SU</td>
</tr>
<tr>
<td>EH 102</td>
<td>Freshman Composition II</td>
<td>3</td>
<td>EH 101 or EH 101S, grade of C or higher</td>
<td>FA/SP/SU</td>
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</table>

**Elective Courses**

**Fine Art and Humanities** 12 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA 171</td>
<td>Calculus A</td>
<td>MA 113 or MA 115 or Level 3 placement</td>
<td>FA/SP/SU</td>
</tr>
<tr>
<td>MA 172</td>
<td>Calculus B</td>
<td>MA 171</td>
<td>FA/SP/SU</td>
</tr>
<tr>
<td>MA 201</td>
<td>Calculus C</td>
<td>MA 172</td>
<td>FA/SP/SU</td>
</tr>
<tr>
<td>MA 238</td>
<td>Applied Differential Equations</td>
<td>MA 172, Prereq w/ Con: MA 201</td>
<td>FA/SP/SU</td>
</tr>
<tr>
<td>MA 385</td>
<td>Intro to Prob and Stats</td>
<td>MA 172, MA 200+ course</td>
<td>FA/SP/SU</td>
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</table>

**History and Social Behavioral Science** 12 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>GY 105</td>
<td>World Geography</td>
<td>Strongly Recommended</td>
<td>SP</td>
</tr>
<tr>
<td>GY 110</td>
<td>Human Geography</td>
<td>Strongly Recommended</td>
<td>FA</td>
</tr>
<tr>
<td>*</td>
<td>History/Soc &amp; Beh Science</td>
<td>See Back for Choices</td>
<td>FA/SP/SU</td>
</tr>
</tbody>
</table>

**Chemistry** 4 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>CH 121/125</td>
<td>General Chemistry I + lab</td>
<td>CH 101+ MA 113, 115 con. or Level 3 Plcmt.</td>
<td>FA/SP/SU</td>
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</table>

**Computer Science** 3 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 102</td>
<td>Computer Science</td>
<td>REQUIRED</td>
<td>FA/SP/SU</td>
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</tbody>
</table>

**Technical Writing** 3 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH 101</td>
<td>Technical Writing</td>
<td>EH 101, EH 102, C or higher + JR Standing</td>
<td>FA/SP/SU</td>
</tr>
</tbody>
</table>

**Earth System Science Core Courses** 24 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 103</td>
<td>Env. Earth Sci Fnd &amp; App + lab</td>
<td>FA/SP</td>
<td></td>
</tr>
<tr>
<td>ESS 111</td>
<td>Climate &amp; Global Change + lab</td>
<td>FA/SP</td>
<td></td>
</tr>
<tr>
<td>ESS 112</td>
<td>Severe &amp; Hazard Weather + lab</td>
<td>ESS 111</td>
<td>SP</td>
</tr>
<tr>
<td>ESS 301</td>
<td>Intro to Earth &amp; Atmos Science</td>
<td>ESS 103, ESS 111, PH 111, MA 171</td>
<td>FA/SP</td>
</tr>
<tr>
<td>ESS 303</td>
<td>Class/Physical Causes Climate</td>
<td>ESS 103, ESS 111, PH 111, MA 171</td>
<td>FA/SP</td>
</tr>
<tr>
<td>ESS 370</td>
<td>Intro to Remote Sensing</td>
<td>ESS 103, ESS 111, PH 111, MA 171, CS 102</td>
<td>SP</td>
</tr>
<tr>
<td>ESS 498</td>
<td>UG Capstone Proposal</td>
<td>Senior standing, consent of instructor</td>
<td>FA/SP/SU</td>
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<tr>
<td>ESS 499</td>
<td>UG Research Capstone</td>
<td>ESS 498, grade of S</td>
<td>FA/SP/SU</td>
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</table>

**Atmospheric Science/Meteorology Concentration Courses** 27 credits

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Semester offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS 305</td>
<td>Hydrology</td>
<td>ESS 103, 111, PH 111, MA 171</td>
<td>SP</td>
</tr>
<tr>
<td>ESS 321</td>
<td>Pollution Problems</td>
<td>ESS 103, 111, PH 111, MA 171, CH 121/125</td>
<td>FA</td>
</tr>
<tr>
<td>ESS 409</td>
<td>Applications of Computers in Met</td>
<td>ESS 301, CS 102, MA 172, PH 112/115</td>
<td>FA</td>
</tr>
<tr>
<td>ESS 441</td>
<td>Atmos Thermo &amp; Cloud Physics</td>
<td>ESS 301, MA 238, PH 112/115</td>
<td>FA</td>
</tr>
<tr>
<td>ESS 471</td>
<td>Intro to Radar Meteorology</td>
<td>ESS 301, 441</td>
<td>SP</td>
</tr>
<tr>
<td>*ESS 410</td>
<td>Operational Weather Forecasting</td>
<td>ESS 111, 112, 301, MA 172, PH 112/115</td>
<td>FA</td>
</tr>
<tr>
<td>ESS 420</td>
<td>Intro Atmos Chem &amp; Air Pollution</td>
<td>ESS 301, 321, PH 112/115, CH 121/125</td>
<td>SP</td>
</tr>
<tr>
<td>*ESS 451</td>
<td>Atmospheric Fluid Dynamics I</td>
<td>ESS 301, MA 238, PH 113/116</td>
<td>FA</td>
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<tr>
<td>*ESS 452</td>
<td>Synoptic Meteorology</td>
<td>ESS 301, 441, 451</td>
<td>FA</td>
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<tr>
<td>*ESS 454</td>
<td>Forecasting Mesoscale Process</td>
<td>ESS 301, 451</td>
<td>SP</td>
</tr>
<tr>
<td>ESS 461</td>
<td>Atmospheric Radiation I</td>
<td>ESS 301, MA 238, PH 113/116</td>
<td>SP</td>
</tr>
</tbody>
</table>

**Elective Courses** 11 credits. Elective courses can be taken from any dept. and do not have to be taken in your major or minor. 4 credits of HPE 100-199 can count.

Total (CF + COS + ESS + ATS + electives) = 128 credits to graduate. 39 of the 128 credits must be taken @ 300 level or higher
# Earth System Science (ESS) Major, Atmospheric Science (ATS) Meteorology Concentration

## Charger Foundations (CF) and College of Science (COS) Requirements

<table>
<thead>
<tr>
<th>CF Requirements</th>
<th>Choices for how to meet the requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Freshman Composition I &amp; II</strong></td>
<td>• Freshman Composition I &amp; II (EH 101 + 102)</td>
</tr>
<tr>
<td></td>
<td>• Intensive Writing &amp; Studio &amp; Freshman Comp II (EH 101S + 101L &amp; EH 102)</td>
</tr>
<tr>
<td></td>
<td>• Honors English Seminar (EH 105; equivalent to EH 101 &amp; EH 102)</td>
</tr>
<tr>
<td><strong>Fine Arts</strong></td>
<td></td>
</tr>
<tr>
<td>Choose 1</td>
<td>• Ancient to Medieval Art (ARH 100)</td>
</tr>
<tr>
<td></td>
<td>• Renaissance to Modern Art (ARH 101)</td>
</tr>
<tr>
<td></td>
<td>• Non-Western Art (ARH 103)</td>
</tr>
<tr>
<td></td>
<td>• Theater Appreciation (CM 122)</td>
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<tr>
<td></td>
<td>• Introduction to Drawing (ARS 160)</td>
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<tr>
<td></td>
<td>• Intro to Music Literature (MU 100)</td>
</tr>
<tr>
<td><strong>Literature</strong></td>
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</tr>
<tr>
<td>Choose 1</td>
<td>• Readings Literature/Culture I (EH 207)</td>
</tr>
<tr>
<td></td>
<td>• Readings Literature/Culture II (EH 208)</td>
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<tr>
<td></td>
<td>• Honors Literature I (EH 209)</td>
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<td></td>
<td>• Honors Literature II (EH 210)</td>
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<tr>
<td><strong>speech</strong></td>
<td>Required</td>
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<tr>
<td></td>
<td>Intro to Rhetorical Communication (CM 113)</td>
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<tr>
<td><strong>Humans/ Fine Art/ 2nd Literature</strong></td>
<td></td>
</tr>
<tr>
<td>Choose 1</td>
<td>Introduction to Ethics (PHL 102) OR Science, Tech &amp; Human Values (PHL 150) REQUIRED FOR ALL ESS MAJORS</td>
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<tr>
<td><strong>Math</strong></td>
<td>Calculus A (MA 171)</td>
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<tr>
<td><strong>Natural Lab Science Sequence</strong></td>
<td>Physics w/ Calculus I &amp; II (PH 111/114 + PH 112/115)</td>
</tr>
<tr>
<td><strong>History</strong></td>
<td></td>
</tr>
<tr>
<td>Choose 1</td>
<td>• World History I (HY 103)</td>
</tr>
<tr>
<td></td>
<td>• US History I (HY 221)</td>
</tr>
<tr>
<td></td>
<td>• World History II (HY 104)</td>
</tr>
<tr>
<td></td>
<td>• US History II (HY 222)</td>
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<tr>
<td><strong>Social &amp; Behavioral Sciences</strong></td>
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<tr>
<td>Choose 2</td>
<td>• Macroeconomics (ECN 142)</td>
</tr>
<tr>
<td></td>
<td>• Microeconomics (ECN 143)</td>
</tr>
<tr>
<td></td>
<td>• American Govt (PSC 101)</td>
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<td>• Politics &amp; Foreign Govt (PSC 102)</td>
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<td>• International Relations (PSC 260)</td>
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<td></td>
<td>• General Psychology I (PY 101)</td>
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<td>• Life Span Development (PY 201)</td>
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<td>• Global systems &amp; cultures (GS 200)</td>
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<td></td>
<td>• Intro to Sociology (SOC 100)</td>
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<td></td>
<td>• Analysis of Social Problems (SOC 102)</td>
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<td>• Intro to Anthropology (SOC 105)</td>
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<td></td>
<td>• Sociological Perspective on Tech and Science (SOC 150)</td>
</tr>
<tr>
<td></td>
<td>• World Geography (GY 105)**</td>
</tr>
<tr>
<td></td>
<td>• Human Geography (GY 110)**</td>
</tr>
<tr>
<td></td>
<td><strong>Strongly Recommended</strong></td>
</tr>
</tbody>
</table>

- **History OR Social Behavioral Sciences**
  - Take 2nd History Course

- **History or Literature Sequence**
  - Check for 2nd History class OR 2nd Literature class:
    - History (HY 103 + 104) or (HY 221 + 222)
    - Literature (EH 207 + 208) or (EH 209 + 210)

<table>
<thead>
<tr>
<th>COS Requirements</th>
<th>Take courses listed below</th>
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</thead>
<tbody>
<tr>
<td><strong>Additional Science or Engineering</strong></td>
<td>General Chemistry I (CH 121/125)</td>
</tr>
<tr>
<td><strong>Computer Science</strong></td>
<td>C Programming (CS 102)</td>
</tr>
<tr>
<td><strong>Technical Writing</strong></td>
<td>Technical Writing (EH 301)</td>
</tr>
<tr>
<td></td>
<td>Junior standing (64 hours) required to take this course</td>
</tr>
</tbody>
</table>

**2015-2016**