# ENGINEERING TECHNOLOGY & MANAGEMENT FOR AGRICULTURAL SYSTEMS: ENERGY & THE ENVIRONMENT, BS

for the degree of Bachelor of Science Major in Engineering Technology & Management for Agricultural Systems, Energy & the Environment concentration

## Prescribed Courses including Campus General Education

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>Composition I and Speech</strong></td>
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<tr>
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<td>Select one of the following:</td>
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<tr>
<td>RHET 105</td>
<td>Writing and Research and Public Speaking (or equivalent (see college Composition I requirement))</td>
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<tr>
<td>&amp; CMN 101</td>
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</tr>
<tr>
<td>CMN 111</td>
<td>Oral &amp; Written Comm I</td>
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</tr>
<tr>
<td>&amp; CMN 112</td>
<td>and Oral &amp; Written Comm II</td>
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<tr>
<td></td>
<td><strong>Advanced Composition</strong></td>
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<tr>
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<td>Select from the list below</td>
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<tr>
<td>AGCM 220</td>
<td>Communicating Agriculture</td>
<td></td>
</tr>
<tr>
<td>BADM 340</td>
<td>Ethical Dilemmas of Business</td>
<td></td>
</tr>
<tr>
<td>BTW 250</td>
<td>Principles Bus Comm</td>
<td></td>
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<tr>
<td>BTW 261</td>
<td>Principles Tech Comm</td>
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<tr>
<td>ECE 316</td>
<td>Ethics and Engineering</td>
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<tr>
<td>ESE 360</td>
<td>Environmental Writing</td>
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<tr>
<td>ETMA 311</td>
<td>Humanity in the Food Web</td>
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<tr>
<td>LEAD 230</td>
<td>Leadership Communications</td>
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<tr>
<td>NRES 419</td>
<td>Env and Plant Ecosystems</td>
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<tr>
<td>PLPA 200</td>
<td>Plants, Pathogens, and People</td>
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<td></td>
<td><strong>Cultural Studies</strong></td>
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<td>Select one course from Western culture, one from non-Western culture, and one from U.S. minority culture from campus approved lists.</td>
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<td></td>
<td><strong>Foreign Language</strong></td>
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<td>Coursework at or above the third level is required for graduation.</td>
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<td></td>
<td><strong>Quantitative Reasoning I</strong></td>
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<tr>
<td>MATH 234</td>
<td>Calculus for Business I (or equivalent)</td>
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<td></td>
<td><strong>Quantitative Reasoning II</strong></td>
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<td>Select one of the following:</td>
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<tr>
<td>ACE 262</td>
<td>Applied Statistical Methods and Data Analytics I</td>
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<tr>
<td>CPSC 241</td>
<td>Intro to Applied Statistics</td>
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<tr>
<td>ECON 202</td>
<td>Economic Statistics I</td>
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<tr>
<td>STAT 107</td>
<td>Data Science Discovery</td>
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<td></td>
<td><strong>Natural Sciences and Technology</strong></td>
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<tr>
<td>CHEM 102</td>
<td>General Chemistry I</td>
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<tr>
<td>&amp; CHEM 103</td>
<td>and General Chemistry Lab I</td>
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<td>PHYS 101</td>
<td>College Physics: Mech &amp; Heat</td>
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<tr>
<td>CHEM 104</td>
<td>General Chemistry II</td>
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<tr>
<td>&amp; CHEM 105</td>
<td>and General Chemistry Lab II</td>
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<td></td>
<td><strong>Humanities and the Arts</strong></td>
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<td>Select from campus approved list.</td>
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<tr>
<td></td>
<td><strong>Social and Behavioral Sciences</strong></td>
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<tr>
<td>ACE 100</td>
<td>Introduction to Applied Microeconomics</td>
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Information listed in this catalog is current as of 06/2022
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tr>
<td>or ECON 102</td>
<td>Microeconomic Principles</td>
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<tr>
<td>Social and behavioral sciences. Select from campus approved list.</td>
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<td>ACES 101</td>
<td>Contemporary Issues in ACES</td>
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<td>ETMA Required</td>
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<tr>
<td>CS 105</td>
<td>Intro Computing: Non-Tech</td>
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<tr>
<td>ETMA 100</td>
<td>Technical Systems in Agr</td>
<td>3</td>
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<tr>
<td>ETMA 339</td>
<td>Optimization in Engineering Technology and Management</td>
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<tr>
<td>ETMA 421</td>
<td>Industrial and Agricultural Safety-Injury Prevention</td>
<td>3</td>
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<tr>
<td>or ETMA 422</td>
<td>Industrial and Agricultural Occupational Illness Prevention</td>
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<td>ETMA 430</td>
<td>Project Management</td>
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<td>ETMA 439</td>
<td>Capstone Experience</td>
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<tr>
<td>Business electives</td>
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<tr>
<td>A total of 6 hours from the Business Electives list which do not satisfy any other requirements.</td>
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<tr>
<td>ACCY 200</td>
<td>Fundamentals of Accounting</td>
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<td>ACCY 201</td>
<td>Accounting and Accountancy I</td>
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<tr>
<td>ACCY 202</td>
<td>Accounting and Accountancy II</td>
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<tr>
<td>ACCY 211</td>
<td>Understanding Financial Statements</td>
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<tr>
<td>ACCY 212</td>
<td>Understanding Accounting for Business Decisions</td>
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<tr>
<td>ACE 210</td>
<td>Environmental Economics</td>
<td>3</td>
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<tr>
<td>ACE 240</td>
<td>Personal Financial Planning</td>
<td>3</td>
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<tr>
<td>ACE 310</td>
<td>Natural Resource Economics</td>
<td>3</td>
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<tr>
<td>ACE 345</td>
<td>Finan Decision Indiv Sm Bus</td>
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<tr>
<td>ACE 346</td>
<td>Tax Policy and Finan Planning</td>
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<tr>
<td>ACE 432</td>
<td>Advanced Farm Management</td>
<td>3 or 4</td>
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<td>ACE 435</td>
<td>Global Agribusiness Management</td>
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<td>AGCM 270</td>
<td>Ag Sales and Persuasive Communication</td>
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<td>BADM 300</td>
<td>The Legal Environment of Bus</td>
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<tr>
<td>BADM 310</td>
<td>Mgmt and Organizational Beh</td>
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<tr>
<td>BADM 311</td>
<td>Leading Individuals and Teams</td>
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<tr>
<td>BADM 312</td>
<td>Designing and Managing Orgs</td>
<td>3</td>
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<tr>
<td>BADM 313</td>
<td>Strategic Human Resource Management</td>
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</tr>
<tr>
<td>BADM 314</td>
<td>Leading Negotiations</td>
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<tr>
<td>BADM 320</td>
<td>Principles of Marketing</td>
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<tr>
<td>BADM 322</td>
<td>Marketing Research</td>
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<td>BADM 323</td>
<td>Marketing Communications</td>
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<tr>
<td>BADM 326</td>
<td>Pricing Strategy</td>
<td>3</td>
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<tr>
<td>FIN 221</td>
<td>Corporate Finance</td>
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<tr>
<td>FIN 230</td>
<td>Introduction to Insurance</td>
<td>3</td>
</tr>
<tr>
<td>LER 290</td>
<td>Introduction to Employment Law</td>
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<tr>
<td>LEAD 140</td>
<td>Harnessing Your Interpersonal Intelligence</td>
<td>2</td>
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<td>LEAD 260</td>
<td>Foundations of Leadership</td>
<td>3</td>
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<tr>
<td>LEAD 340</td>
<td>Leadership Ethics &amp; Society: Addressing Contemporary Challenges</td>
<td>3</td>
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<tr>
<td>LEAD 380</td>
<td>Leadership in Groups and Teams</td>
<td>3</td>
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<tr>
<td>LEAD 440</td>
<td>Interpersonal Intelligence for Professional Success</td>
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<tr>
<td>SE 361</td>
<td>Emotional Intelligence Skills</td>
<td>3</td>
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<tr>
<td>SE 400</td>
<td>Engineering Law</td>
<td>3 or 4</td>
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<tr>
<td>TE 230</td>
<td>Design Thinking/Need-Finding</td>
<td>3</td>
</tr>
<tr>
<td>TE 250</td>
<td>From Idea to Enterprise</td>
<td>2</td>
</tr>
<tr>
<td>TE 333</td>
<td>Creativity, Innovation, Vision</td>
<td>4</td>
</tr>
<tr>
<td>TE 360</td>
<td>Lectures in Engineering Entrepreneurship</td>
<td>1</td>
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<tr>
<td>TE 450</td>
<td>Startups: Incorporation, Funding, Contracts, &amp; Intellectual Property</td>
<td>3</td>
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</table>

*Information listed in this catalog is current as of 06/2022*
**Introductory Related Courses**
Select 2 courses from the list for your concentration.

**ETMA Electives**
A total of 20 hours from the list for your concentration with a minimum of 11 hours at the advanced level.

**Concentration Electives**
Select 18 hours from the list for your concentration, which do not satisfy any other requirements, with a minimum of 12 hours at the advanced level.

**Total Hours**
ETMAS majors will need 40 hours of upper-level courses (300- and 400-level) to satisfy the campus minimum requirement of 40 hours of advanced coursework.

### Concentration Requirements

<table>
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<tr>
<th>Code</th>
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<th>Hours</th>
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<tr>
<td><strong>Introductory Related Courses</strong></td>
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<tr>
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<td>Select two courses from this list</td>
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<tr>
<td>ACES 102</td>
<td>Intro Sustainable Food Systems</td>
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<tr>
<td>CPSC 112</td>
<td>Introduction to Crop Sciences</td>
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<tr>
<td>ENVS 101</td>
<td>Introduction to Energy Sources</td>
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<tr>
<td>LEAD 260</td>
<td>Foundations of Leadership</td>
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<tr>
<td>NRES 102</td>
<td>Introduction to NRES</td>
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<tr>
<td>NRES 201</td>
<td>Introductory Soils</td>
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<tr>
<td>UP 136</td>
<td>Urban Sustainability</td>
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<td><strong>ETMA Electives</strong></td>
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<tr>
<td>ETMA 352</td>
<td>Land and Water Mgt Systems</td>
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<tr>
<td>ETMA 438</td>
<td>Renewable Energy Applications</td>
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<td>Select an additional 14 hours from the list below for a total of 20 hours with a minimum of 11 hours at the advanced level</td>
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<tr>
<td>ETMA 130</td>
<td>Basics of CAD</td>
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<td>ETMA 132</td>
<td>Basics of Project Management</td>
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<tr>
<td>ETMA 232</td>
<td>Materials and Construction Sys</td>
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<tr>
<td>ETMA 233</td>
<td>Metallurgy &amp; Welding Processes</td>
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<tr>
<td>ETMA 234</td>
<td>Wiring, Motors and Control Sys</td>
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<tr>
<td>ETMA 295</td>
<td>Undergrad Research or Thesis</td>
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<td>ETMA 371</td>
<td>Residential Housing Design</td>
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<td>ETMA 372</td>
<td>Environ Control &amp; HVAC Systems</td>
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<td>ETMA 396</td>
<td>UG Honors Research or Thesis</td>
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<td>ETMA 425</td>
<td>Managing Industrial and Agricultural Safety Risks</td>
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<td>ETMA 435</td>
<td>Elec Computer Ctrl Sys</td>
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<tr>
<td>ETMA 496</td>
<td>Independent Study</td>
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<td><strong>Concentration Electives</strong></td>
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<td>Select 18 hours from the list below with a minimum of 12 hours at the advanced level.</td>
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<tr>
<td></td>
<td>At least one of:</td>
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</tr>
<tr>
<td>ACE 210</td>
<td>Environmental Economics</td>
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<tr>
<td>ACE 310</td>
<td>Natural Resource Economics</td>
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<td>ACE 406</td>
<td>Environmental Law</td>
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<td>ACE 410</td>
<td>Energy Economics</td>
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<tr>
<td>ACE 411</td>
<td>Environment and Development</td>
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<td>At least one of:</td>
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<tr>
<td>NRES 219</td>
<td>Applied Ecology</td>
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<tr>
<td>NRES 370</td>
<td>Environmental Sustainability</td>
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<tr>
<td>NRES 419</td>
<td>Env and Plant Ecosystems</td>
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<td>NRES 420</td>
<td>Restoration Ecology</td>
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<tr>
<td>NRES 425</td>
<td>Natural Resources Law &amp; Policy</td>
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<tr>
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<td>Renewable Energy Policy</td>
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<td>NRES 429</td>
<td>Aquatic Ecosystem Conservation</td>
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<td>NRES 438</td>
<td>Soil Nutrient Cycling</td>
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<td>NRES 439</td>
<td>Env and Sustainable Dev</td>
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<td>NRES 471</td>
<td>Pedology</td>
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<td>NRES 474</td>
<td>Soil and Water Conservation</td>
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<td>NRES 477</td>
<td>Introduction to Remote Sensing</td>
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<tr>
<td>NRES 488</td>
<td>Soil Fertility and Fertilizers</td>
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At least one of:
- UP 405 Watershed Ecology and Planning
- UP 406 Urban Ecology
- UP 446 Sustainable Planning Seminar
- UP 466 Energy & the Built Environment
- UP 480 Sustainable Design Principles

May select from the below list to achieve 18 hours:
- AGCM 330 Environmental Communications
- CEE 320 Construction Engineering
- CEE 330 Environmental Engineering
- CPSC 215 The Prairie and Bioenergy
- CPSC 336 Tomorrow's Environment
- CPSC 415 Bioenergy Crops
- CPSC 416 Native Plants, Pollinators, & Food Ecosystems
- CPSC 431 Plants and Global Change
- CPSC 437 Principles of Agroecology
- ESE 465 Transportation & Sustainability
- ESE 482 Challenges of Sustainability
- GLBL 201 Energy Systems

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