Earth System Science & Policy
Master of Science

The graduate program in Earth System Science and Policy is organized around the field of environmental sustainability and offers three degrees: Master of Environmental Management, Master of Science, and Doctor of Philosophy. Sustainability science has emerged as an intellectually exciting, growing discipline that is a driving concept for major international scientific and environmental policy efforts. By bridging theory with practice, global and local perspectives, and scientific and social disciplines, sustainability science seeks to meet the needs of society while sustaining the life support systems of the planet.

The mission of the Master of Science in ESSP is to provide an integrated and creative learning environment that fosters intellectual growth, critical thinking, and practical engagement, especially in research and management of the Earth system and resources. The MS program is a thematic one, emphasizing practical experience, student-centered learning, and integration of knowledge across traditional disciplinary boundaries, and active dialogue both in and outside the classroom. The Master of Science is designed to accommodate a large range of research interests all of which must be multi-disciplinary. It is intended for those primarily interested in the science of the Earth’s systems, as well as how that science can be integrated into programs of action that lead to sustainability. Those who are highly focused in a particular discipline are encouraged to seek graduate opportunities in that discipline. Requirements for the MS degree will culminate in submission and defense of a thesis.

Admission Requirements
Applicants who are seeking admission to School of Graduate Studies must meet all of the minimum general education requirements identified in the graduate catalog. In addition, students must fulfill the requirements below for admission to Earth System Science and Policy M.S. degree program.

1. Hold a bachelor’s degree from an accredited college or university.
2. Have satisfactorily completed a minimum of college-level algebra plus 3 credits of college statistics or calculus.
3. Have completed a minimum of 12 semester credits in the natural or physical sciences, e.g., physics, chemistry, geosciences, biology or related sciences.
4. Have earned a minimum average GPA of 3.00 on a 4.00 scale, on all upper division college-level coursework.
5. Submit score from the Graduate Record Examination (GRE) General Test.
6. Satisfy the School of Graduate Studies’ English Language Proficiency requirements as published in the graduate catalog.

Degree Requirements
Students seeking the Master of Science degree at the University of North Dakota must satisfy all general requirements set forth by the School of Graduate Studies as well as particular requirements set forth by the Earth System Science and Policy Department.

The overarching goal of all the degree programs offered in Earth System Science and Policy is to facilitate the acquisition of skills required to solve environmental problems or to seize opportunities presented by a changing environment. Much of the responsibility for learning rests upon the student.

1. Students enrolled in the MS program will take the following sequences. Students will complete the basic two-semester core sequences of courses during their first year of study.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ESSP 501</td>
<td>Earth System Science and Policy I</td>
<td>10</td>
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<tr>
<td>&amp; 501R</td>
<td>and Earth System Science and Policy Recitation</td>
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<tr>
<td>&amp; 501L</td>
<td>and Earth System Science and Policy Laboratory I</td>
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<td></td>
<td>(offered in the Fall)</td>
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<tr>
<td>ESSP 502</td>
<td>Earth System Science and Policy II</td>
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2. A minimum of 36 credits beyond the baccalaureate is required, including six to nine credits for thesis.
3. At least one-half of the credits must be at or above the 500 level.
4. A maximum of one-fourth (usually 8-9 semester credits) of the credit hours required for the degree may be transferred from another institution.
5. By the end of the first semester the student will select a chair of her/his Advisory Committee and, in consultation with that chair, recommend membership on the Advisory Committee. The Advisory Committee will have 3 members, at least two of whom must be from the ESSP faculty. If the student is pursuing a minor concurrently with the MS in ESSP, one of the committee members will be from the department of the minor.
6. Students must file with the School of Graduate Studies an approved program of study before the completion of fifteen credits of coursework.
7. Students must maintain a GPA of 3.00, and comply with the requirements of the School of Graduate Studies. Grades poorer than “C” will not be accepted as fulfilling degree requirements.
8. MS student must complete oral and written examinations to qualify for candidacy in the Master of Science program. These will occur no later than the end of the first year of coursework and will entail a 15 to 30 page written description and an oral presentation of their intended research project.
9. Successful completion, and oral defense, of a thesis is required for the MS degree.
10. All exams will be administered and evaluated by the student’s Advisory Committee.

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<tr>
<td>ESSP 501R</td>
<td>Earth System Science and Policy Recitation</td>
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<td>ESSP 501L</td>
<td>Earth System Science and Policy Laboratory I</td>
<td>2</td>
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<td>ESSP 502</td>
<td>Earth System Science and Policy II</td>
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<tr>
<td>ESSP 502R</td>
<td>Earth System Science and Policy Recitation II</td>
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</tr>
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<tr>
<td>Electives</td>
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<tr>
<td>ESSP 998</td>
<td>Thesis</td>
<td>4-9</td>
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<tr>
<td>Total Credits</td>
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<td>31-42</td>
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**Faculty and Areas of Expertise**

- **Michael Hill, Ph.D.**, remote sensing, spatio-temporal analysis, grassland and savannas, land use/land cover change.
- **Andrei Kirilenko, Ph.D.**, environmental modeling, model integration, climate change impacts, land use change, mitigation and adaptation.
- **Soizik Laguette, Ph.D.**, remote sensing, biomass energy, precision agriculture, agronomy, teaching in adult outreach settings.
- **Rebecca Romsdahl, Ph.D.**, environmental policy, human dimensions of global climate change, protected lands management, social survey research.
- **Jeffrey VanLooy, Ph.D.**, physical geography, geomorphology, climate change, remote sensing, GIS
- **Xiaodong Zhang, Ph.D.**, oceanography, hydrology, radiative transfer, remote sensing
- **Haochi Zheng, Ph.D.**, environmental & resource economics, energy economics, ecological economics, development economics, applied/micro econometrics

**Contact Information**

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