

# MASTER OF SCIENCE IN ECOSYSTEM SUSTAINABILITY, PLAN A

## Requirements Effective Fall 2023

Code	Title	Credits
<b>Required Core Courses:</b>		
ESS 501	Principles of Ecosystem Sustainability	3
ESS 692	Seminar	1
<b>Areas – Select a minimum of 20 credits from the four Areas indicated below:</b>		<b>20</b>

### Ecosystem Science

At least one course must be selected from the following (2-3 credits):

ESS 524	Foundations for Carbon/Greenhouse Gas Mgmt
ESS 543/ATS 543	Global Climate Change
ESS 625/F 625	Ecology of Forest Production
ESS 660	Biogeochemical Cycling in Ecosystems

Additional courses may be selected from the following:

ATS 753	Global Hydrologic Cycle
ATS 760	Global Carbon Cycle
BZ 572	Phytoremediation
BZ 642	Plant Metabolism
ECOL 505	Foundations of Ecology
ECOL 600	Community Ecology
ECOL 620	Applications in Landscape Ecology
F 510	Ecophysiology of Trees
F 624	Fire Ecology
FW 555	Conservation Biology
HORT 571	Soil-Plant-Water Relations/Water Stress
RS 531	World Grassland Ecogeography
RS 630	Ecology of Grasslands and Shrublands
SOCR 522	Micrometeorology
SOCR 540	Soil-Plant-Nutrient Relationships
WR 574	Advanced Snow Hydrology
WR 616	Hillslope Hydrology and Runoff Processes

### Ecosystem Sustainability

The following course must be taken (2 credits):

ESS 542	Greenhouse Gas Policies
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Additional courses may be selected from the following:

AGRI 500	Advanced Issues in Agriculture
AGRI 521	Emerging Issues and Challenges for Global Agr
AGRI 602	Bioenergy Policy, Economics, and Assessment
AGRI 632	Managing for Ecosystem Sustainability
AGRI 635	Integrated Forage Management
AGRI 637	Understanding Policy and Emerging Issues

AGRI 638	Ecosystem Services on Agricultural Lands
ANTH 529	Anthropology and Sustainable Development
ANTH 530	Human-Environment Interactions
AN EQ 548	Issues in Manure Management
AREC 542	Applied Advanced Water Resource Economics
AREC 566/ SOC 566	Contemporary Issues in Developing Countries
ECOL 592	Interdisciplinary Seminar in Ecology
GES 542	Biobased Fuels, Energy, and Chemicals
NR 515	Natural Resources Policy and Biodiversity
NR 535	Action for Sustainable Behavior
NR 550	Sustainable Military Lands Management
PHIL 565	Seminar in Environmental Philosophy
POLS 670	Politics of Environment and Sustainability
POLS 709	Environmental Politics in the U.S.
POLS 729	Political Theory and the Environment
POLS 739	International Environmental Politics
POLS 749	Comparative Environmental Politics
POLS 759	Environmental Policy and Administration
RS 565	Riparian Ecology and Management
SOC 564	Environmental Justice
SOC 666	Globalization and Socioeconomic Restructuring
SOC 668	Environmental Sociology
SOC 669	Global Inequality and Change
WR 510	Watershed Management in Developing Countries

### Quantitative Methods

At least one course must be selected from the following (4 credits):

ESS 545	Applications in Greenhouse Gas Inventories
ESS 565	Niche Models
ESS 575	Models for Ecological Data

Additional courses may be selected from the following:

ANTH 554/ ESS 554	Ecological and Social Agent-based Modeling
AREC 535/ ECON 535	Applied Econometrics
AREC 540/ ECON 540	Environmental and Natural Resource Economics
ECOL 620	Applications in Landscape Ecology
F 521	Advanced Quantitative Methods in Forestry II
GEOL 551	Groundwater Modeling
LAND 520	Geographic Information Systems
NR 503/GR 503	Remote Sensing and Image Analysis
NR 505	Concepts in GIS
NR 512	Spatial Statistical Modeling-Natural Resources
NR 523/STAT 523	Quantitative Spatial Analysis
NR 565	Principles of Natural Resources Ecology
RS 532	Rangeland Ecosystem Sampling

SOCR 620	Modeling Ecosystem Biogeochemistry
SOCR 670	Terrestrial Ecosystems Isotope Ecology
STAA 551	Regression Models and Applications
STAA 552	Generalized Regression Models
STAA 553	Experimental Design
STAA 554	Mixed Models
STAA 561	Probability with Applications
STAA 562	Mathematical Statistics with Applications
STAA 565	Quantitative Reasoning
STAA 566	Data Visualization Methods
STAA 567	Computational and Simulation Methods
STAA 571	Survey Statistics
STAA 572	Nonparametric Methods
STAA 573	Analysis of Time Series
STAA 574	Methods in Multivariate Analysis
STAA 575	Applied Bayesian Statistics
STAA 576	Methods in Spatial Statistics
STAR 511	Design and Data Analysis for Researchers I
STAR 512	Design and Data Analysis for Researchers II
STAT 521	Stochastic Processes I
STAT 525	Analysis of Time Series I
STAT 540	Data Analysis and Regression
STAT 544/ ERHS 544	Biostatistical Methods for Quantitative Data
STAT 547/ CIVE 547	Statistics for Environmental Monitoring
STAT 560	Applied Multivariate Analysis
STAT 570	Nonparametric Statistics
STAT 600	Statistical Computing
STAT 605	Theory of Sampling Techniques
STAT 640	Design and Linear Modeling I
STAT 645	Categorical Data Analysis and GLIM
STAT 650	Design and Linear Modeling II
WR 524/CIVE 524	Modeling Watershed Hydrology
WR 575	Snow Hydrology Field Methods
WR 674	Data Issues in Hydrology

**Communication/Collaboration**

At least one course must be selected from the following (1-3 credits):

ECOL 693	Research Seminar
JTC 614	Public Communication Campaigns
JTC 660	Communication and Innovation
JTC 661	Information Design
JTC 662	Communicating Science and Technology
NR 501	Leadership and Public Communications

**Research and Thesis (minimum credits required):**

ESS 698	Research	3
ESS 699	Thesis	3

**Program Total Credits: 30**

A minimum of 30 credits are required to complete this program.