

# Environmental Science & Management – Masters Degrees Course Requirements & Course Lists For Students Starting Fall 2022 and After

## Requirements

**MS:** Take at least one course from each core course category plus a second ecological or physical systems course; 4 courses of concentration and electives in science, management, GIS, or other thesis related courses; practicum; 3 seminars; and 6-12 thesis credits. Courses outside the core and special course lists require a DARS exception and approval of the major advisor.

**MEM:** Take at least one course from each category; project management; 4 more courses of concentration and electives in science, management, GIS, or other project related courses; practicum and project management courses; 3 seminars; and 5 project credits. Courses outside the core and special course lists require a DARS exception and approval of the major advisor.

**PSM** Take at least one course from each category; 4 more courses in science, management, GIS, or other project related courses; practicum and project management courses; 3 seminars; 5 project credits; and 10 credits from PLUS Course List. Courses outside the core and special course lists require a DARS exception and approval of the major advisor.

**DARS Exceptions** – Send the following information to the ESM Chair (cc your major advisor): your PSU ID#, your degree, details of the request including course taken and quarter (e.g. Geog 5XX, Fall 2022), the DARS exception you would like made, (e.g., allow Geog 5XX to count for DARS requirement #1 Core: Physical Systems), and the course catalog year you are using (e.g., 2022-2023 MS requirements).

## ESM Masters – Special Courses

Course Number	Typical Quarter	Course Title	Requirement
ESM 509	F	Practicum	Project Development
ESM 551	W	Project Management for Scientists	Project Development
ESM 510*	W	Graduate Writing Seminar	Elective & Supporting
ESM 555	F	Science Communication	Elective & Supporting
ESM 556	W	Advanced Science Communication	Elective & Supporting
ESM 557	Sp	Science, Media, and the Public	Elective & Supporting
ESM 507	W	Speakers Seminar	ESM 507 Seminar
ESM 503	By arrangement	Thesis	Thesis (MS)
ESM 506	By arrangement	Project	Project (MEM / PSM)
ESM 501	By arrangement	Research	Talk to your advisor
ESM 502	By arrangement	Independent Study	Talk to your advisor
ESM 504	By arrangement	Internship	Talk to your advisor
ESM 505	By arrangement	Reading & Conference	Talk to your advisor

F=Fall; W=Winter; Sp=Spring; Su=Summer; eo=every other; \*=temporary course number.

### **ESM Masters – Core Course List**

<b>Course #</b>	<b>Typical Quarter</b>	<b>Course Title</b>	<b>Physical Systems</b>	<b>Ecological Systems</b>	<b>Environmental Management</b>	<b>Advanced Data Analysis</b>
ESM 510*	eoW	Snow Hydrology (winter)	x			
ESM 525	Sp	Watershed Hydrology (spring)	x			
ESM 527	eoSp	Watershed Biogeochemistry (every other spring)	x			
ESM 560	W	Air Quality (winter)	x			
ESM 571	eoF	Atmospheric Physics (every other fall)	x			
ESM 579	Sp	Fate and Transport of Toxics (spring)	x			
ESM 517	Su	Applied Watershed Restoration (summer)		x		
ESM 518	--	Landscape Ecology		x		
ESM 520	F	Ecological Toxicology (fall)		x		
ESM 524	eoSp / Su	Wetland Ecology		x		
ESM 526	F	Ecology of Stream & Rivers		x		
ESM 544	Sp	Forest Ecology		x		
ESM 575	eoF	Limnology & Aquatic Ecology		x		
ESM 580	Sp	Coastal Marine Ecology		x		
ESM 585	F / Su	Ecology & Management of Bio-invasions		x		
ESM 516	F	Ecosystem Restoration			x	
ESM 528	W	Urban Ecology			x	
ESM 529	Sp	Environmental Impact Assessment			x	
ESM 535	F	Natural Resource Policy and Management			x	
ESM 540	Su	Ecology & Management of Wildfire			x	
ESM 563	W	Water Quality Policy and Management			x	
ESM 564	Sp	Climate Adaptation: Managing Risks & Vulnerability			x	
ESM 583	W	Marine Conservation Science & Management			x	
ESM 587	F	Environmental Justice			x	
ESM 588	F	Environmental Sustainability			x	
ESM 566	F / W	Environmental Data Analysis				x
ESM 567	W	Multivariate Analysis of Ecological Systems				x

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## **ESM Masters – PLUS Courses**

10 credits of PLUS courses are required for the PSM degree with at least 2 credits in each PLUS course area. The PLUS Course list is not exhaustive and students who find courses not on the PLUS Course list will require a DARS exception to apply courses approved by their committees, but that are not on the PLUS Course list.

MS and MEM students can use PLUS courses to fulfill area of concentration or elective and supporting credits with approval of their graduate committee.

<b>Course #</b>	<b>Typical Quarter</b>	<b>Course Title</b>	<b>Credits</b>	<b>Communications</b>	<b>Policy, Laws, Regulations</b>	<b>Project Management</b>	<b>Professional Ethics</b>
ESM 555	F	Science Communication	1	x			
ESM 556	W	Advanced Science Communication Skills	1	x			
ESM 557	Sp	Science, Media and the Public	1	x			
Comm 523	--	Organizational Communication	4	x			
ETM 511	--	Technology Management Writing and Presentations	4	x			
ETM 522	evF	Communication and Teambuilding	4	x			
ESM 535	F	Natural Resource Policy & Management	4		x		
ESM 552	--	Environmental Regulations & Non-regulatory Approaches	3		x		
PA 528	--	Organizational Leadership and Decision Making for Nonprofit Organizations	3			x	
PA 520	F/Sp	Introduction to Nonprofit Management	3			x	
PA 525	F/Sp	Grant Writing for Nonprofit Organizations	3			x	
PA 555	Sp	Program Evaluation and Management	3			x	
PA 536	Sp	Strategic Planning	3			x	
ETM 544	evF	Organizational Project Management	4			x	
ETM 546†	evSp	Project Management Tools	4			x	
ETM 558	evW	Engineering Financial Management	4			x	
ETM 518	--	Ethical Issues in Technology Management	4				x
PA 513	F/onW	Administrative Ethics and Values	3				x
PA 598	W	Values-Based Management	3				x

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Course availability by term and mode are subject to change at the discretion of the department in which the course is listed.

## **Other Potential PLUS Courses requiring DARS Exceptions**

### Communications

1. Comm 548 (Issues in Science and Environmental Communications /eoF, 4cr)
2. Comm 545 (Risk & Strategic Communication /W, 4cr)
3. Wr 535 (Advanced Technical Writing /Fev, 4cr)

### Policy, Laws, and Regulations

1. PA553 (Sustainable Development Policy & Governance /W, 3cr)
2. 564 (Current Issues in Environmental Policy and Administration /W, 3cr)
3. 565 (Natural Resource Policy and Administration /F, 3cr)
4. 566 (Water Resources Policy and Administration /W, 3cr)
5. 568 (Forest Policy and Administration /Sp, 3cr)
6. 569 (Fish and Wildlife Policy and Administration /W, 3cr)
7. USP 571 (Environmental Policy /Sp, 3cr)

### Project Management

1. ETM 525 (Strategic Planning / F, 4cr)
2. ETM 545 (Project Management /W/Sp, 4cr.)

### Professional Ethics

1. BI 520 (Ethical Practice in the Life Sciences /Sp, 4cr)
2. PA 517 (Leadership Development for Public Organizations /W, 3cr)