

AIR RESOURCES MANAGEMENT CERTIFICATE

The 18 credit ARM certificate is open to all students at the graduate level. Ph.D. students have the option of doing the full certificate or 10-credit Ph.D. minor.

Program Prerequisite Courses

- Physics 101, 201 or equivalent
- Chemistry 101 or equivalent
- One course in biological or environmental science
- Economics 101 or equivalent
- One social science course in the area of government, law, institutions, or organizations
- Math 221 or other math beyond college algebra

Prerequisites may be waived upon recommendation of the ARM advisor to the ARM chair.

Certificate Curriculum – 18 credits total

1. Requirements (13 cr.):

a. Core policy requirements

- i. Envir St 539: Air Resources Science and Policy (3 cr.)
- ii. Envir St 502: Air Pollution and Human Health (3 cr.)

b. Core technical requirements

- i. CEE 423: Air Pollution Effects, Measurements, and Control (3 cr.)
- ii. Atmospheric Science (3 cr.) – any 300-level or higher AOS class or other approved air-related class

c. Seminar

- i. Envir St 761: Current Topics in Air Pollution (1 cr.) – *All students pursuing the certificate or PhD minor should enroll in this course for credit (or attend if already taken for credit) each year that they are in the program.*

2. Electives (5 cr.)

a. Skills and methods elective (3 cr.)

Students must select one course in risk assessment or management, economics, law, policy analysis, GIS, statistics, cost-benefit analysis, engineering analysis, measurement, instrumentation, or other skills or methods course. (see list on page 2)

b. Advanced elective (2 cr.)

Students must take one advanced elective course that is approved by the ARM advisor and program chair to complete their certificate. (see list on page 2)

3. Optional substitution:

- a. Students with a strong background in an area covered by one of the core requirements may petition the Chair to substitute advanced coursework in that area for the core requirement.

Satisfactory Progress

ARM students are expected to develop a study plan during their first semester indicating which courses they expect to take. Students must maintain a grade-point average of at least 3.0 in their seven ARM courses, with a minimum grade of BC in any one course.

Approved Elective Courses

Students may propose other courses for the elective requirements that do not appear on this list and must be approved by their advisor and the ARM chair.

- See the timetable on-line for courses offered each term and departmental abbreviations.
- See the Graduate School Catalog for course descriptions and other departmental information.

Skills and Methods Electives:

A E E/Econ/Forest 431:	Natural Resource Economics
A E E/Envir St 881:	Benefit Cost Analysis
Envir St 343:	Environmental Economics
Envir St 400:	Air Pollution Impacts on Vegetation (irreg)
Envir St 671:	Energy Economics
Envir St/Land Arc/Soil Sci 695:	Applications of Geographic Information Systems in Natural Resources
Geog/Envir St 377:	Intro to Geographic Information Systems
Law 848:	Environmental Law
Stat 571:	Statistical Methods for Bioscience I
Stat xxx:	other stats courses selected in consultation with student's committee

Advanced Electives:

Atm Ocn 310:	Dynamics of the Atmosphere and Ocean I
Atm Ocn 330:	Physics of the Atmosphere and Ocean I
Atm Ocn/Envir St 535:	Atmospheric Dispersion and Air Pollution
Atm Ocn 638:	Atmospheric Chemistry
Atm Ocn/ Envir St/et al 980:	Earth System Science Seminar
ChE 426:	Mass Transfer Operations
Civ Engr 427:	Solid & Hazardous Waste Engineering
Civ Engr 521:	Industrial Pollution Control
Civ Engr 609:	Special Topics in Water Chemistry: Air Chemistry
Civ Engr 629:	Special Topics in Environ. Engineering: Air Pollution Lab
Envir St 461:	Environmental Systems Concepts
Envir St 449:	Government and Natural Resources
Envir St 400:	Risk and the Environment (irreg)
Env Tox/ Envir St/Pl Path 368:	Environmental Law, Toxic Substances & Conservation
Ind Engr/NEEP 708:	Societal Risk Management of Technological Hazards
ME 569:	Applied Combustion
ME 770:	Advanced Experimental Instrumentation

AIR RESOURCES MANAGEMENT PhD MINOR

This minor is an external minor and requires approval by the ARM faculty.

Total Credits: 10

- a. Core Policy Requirement (3 credits)
 - Envir St 400 - Air Resources Policy and Science (T. Holloway's class)

- b. Core Technical Requirement (3 credits)
 - CEE 423 - Air Pollution Control Technology

- c. Seminar (1 credit)
 - Envir St 761 - Colloquium in Air Pollution

- d. Approved Elective (3 credits)