Bachelor of Science in Environmental Science

-- Guidelines for Majors --

Department of Soil, Water and Environmental Science
The University of Arizona

2014-2015

BACHELOR OF ENVIRONMENTAL SCIENCE DEGREE

Shantz Building Room 429
520-621-1646
www.ag.arizona.edu/ENVS

REVISED August 2014
INTRODUCTION

Environmental science is the scientific investigation of human interactions with natural systems. The goals of the Bachelor of Environmental Science Degree are to:

1) Offer a rigorous science-based preparation for careers in environmental science;
2) Prepare students for graduate studies in environmental science;
3) Facilitate assuming a leadership role in academia, business, government, private organizations, or other career venues.
4) Provide the academic tools needed to address fundamental and applied problems related to human-inhabited parts of the Earth.

With this degree, students will be well-prepared for careers in private and government agencies, educational institutions, and private consulting firms. Some titles associated with these jobs include: Environmental Scientist, Environmental Engineer, Industrial Hygienist, Environmental Health Specialist, Earth Scientist, Ecologist, Forester, Environmental Chemist, Environmental Microbiologist, Meteorologist, Soil Scientist, Environmental Lawyer, and Natural Resources Manager. Students will also be prepared for an advanced degree in a variety of fields, such as environmental health, resource management, engineering, law, and public policy.

COURSEWORK

The Bachelor of Environmental Science Degree comprises general education, core, and subplan classes typically taken over eight semesters. A suggested course sequence is listed at the end of this brochure.

Note: Some classes have prerequisite requirements; it is important to check the U of A online Schedule of Classes to confirm course availability and class prerequisites. Classes taken to fulfill Core requirements cannot also be used to fulfill Subplan requirements.

GENED Total: 35 units
CORE Total: 69-76 units
    General Science Core: 32-34
    Environmental Science Core: 26-28
    Career Preparation: 10-13
SUBPLAN Total: 18 units

A. General Education. These classes give undergraduates a diverse academic background to complement each major.

<table>
<thead>
<tr>
<th>Foundation Courses</th>
<th>Tier 1</th>
<th>Tier 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Composition 6 Units</td>
<td>Traditions and Cultures 6 Units</td>
<td>Humanities 3 Units</td>
</tr>
<tr>
<td>Mathematics (satisfied by MATH 124/125)</td>
<td>Individuals and Societies 6 Units</td>
<td>Arts 3 Units</td>
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<tr>
<td>Pre-Major</td>
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<td></td>
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<tr>
<td>Communications (satisfied by ENVS 408)</td>
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<tr>
<td>Second Language</td>
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<tr>
<td>Second semester proficiency</td>
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variable
### B. General Science Core (32-34 Units) Note: Required for the Environmental Science Core.

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Fall</th>
<th>Spring</th>
<th>Other</th>
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<tbody>
<tr>
<td>CHEM 151, 152, Intro Chemistry I &amp; II</td>
<td>8</td>
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<tr>
<td>MATH 122A/B Calculus I, OR MATH 125 Calculus I</td>
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<tr>
<td>MATH 263 Statistics OR MATH 363 Intro to Stat Methods OR MGMT 276 Stat Inference OR SBS 200 Introduction to Statistics</td>
<td>3</td>
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<tr>
<td>ECOL 182R, MCB 184 Intro Biology (or MCB 181R/L)</td>
<td>7</td>
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<td>S 2</td>
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<tr>
<td>MIC 205A Intro Microbiology</td>
<td>3</td>
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<tr>
<td>PHYS 102/181 Physics*</td>
<td>4</td>
<td>X</td>
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</table>

*PHYS 141 Intro Mechanics required for Atmo Science & Water Resource Management Subplans;

### C. Environmental Science Core (27-28 units, 18-19 upper division units)

<table>
<thead>
<tr>
<th>Course</th>
<th>Units</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
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</thead>
<tbody>
<tr>
<td>ECOL 302 Ecology OR RNR 316 Nat Res Ecology OR ENVS 425 Env Microbiology OR ECOL 474 Aquatic Plants &amp; The Environ OR ECOL 475 Freshwater &amp; Marine Algae</td>
<td>4</td>
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<tr>
<td>GEOS 251 Physical Geology</td>
<td>4</td>
<td>X</td>
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<tr>
<td>ENVS 420 Env Physics OR ATMO 336 Weather, Climate &amp; Society</td>
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<td>WSM 460A Watershed Hydrology OR HWR 250 Principles of Hydrology</td>
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<td>X</td>
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<tr>
<td>ENVS 200/201 Intro Soils</td>
<td>4</td>
<td>X</td>
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<tr>
<td>ENVS 462 Env Soil &amp; Water Chem OR HWR 417A Fundamentals of Water Quality</td>
<td>3</td>
<td>X</td>
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<tr>
<td>ENVS 305 Pollution Science</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>CPH 418 Human Health Risk Assessment OR HWR 443A Risk Assessment for Env Sys</td>
<td>3</td>
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### D. Career Preparation Courses (10-14 units, 7-11 upper division units)

<table>
<thead>
<tr>
<th>Course*</th>
<th>Units</th>
<th>Fall</th>
<th>Spring</th>
<th>Summer</th>
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<tbody>
<tr>
<td>ENVS 210 Fund Env Sci &amp; Sustainability</td>
<td>3</td>
<td>X</td>
<td></td>
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<tr>
<td>ENVS 415 Translating Env Sci OR AGTM 422 Comm Knowledge in Ag &amp; Life Sci OR ENGL 308 Technical Writing</td>
<td>3</td>
<td>X</td>
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<td>S 1, W S 1, S 2, P</td>
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<tr>
<td>ENVS 393/493 Internship OR ENVS 397A Teaching Workshop OR ENVS 399/499 Independent Study</td>
<td>1</td>
<td>X</td>
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<td>S 1, S 2</td>
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<tr>
<td>ENVS 430R/L Env Monitor/Remed. (Capstone) OR ENVS 461 Soil/Water Cons (Capstone)</td>
<td>4</td>
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<td>S P</td>
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* ENVS 195A Careers in Environmental Science is also highly recommended;

### General Science Core Prerequisite Courses

<table>
<thead>
<tr>
<th>Core Class</th>
<th>Prerequisite Courses</th>
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<tbody>
<tr>
<td>CHEM 151</td>
<td>MATH 112 or MATH 120</td>
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<tr>
<td>CHEM 152</td>
<td>CHEM 151</td>
</tr>
<tr>
<td>CHEM 241A/243A</td>
<td>CHEM 152</td>
</tr>
<tr>
<td>MATH 122A</td>
<td>MATH 111 &amp; 112, or MATH 120R</td>
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</table>

<table>
<thead>
<tr>
<th>Core Class</th>
<th>Prerequisite Courses</th>
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<tbody>
<tr>
<td>MATH 263</td>
<td>MATH 110 or higher</td>
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<tr>
<td>MCB 181R/L, ECOL 182R</td>
<td>MATH 110 or higher</td>
</tr>
<tr>
<td>MIC 205A/L</td>
<td>CHEM 151, MCB 181R</td>
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<tr>
<td>PHYS 102</td>
<td>MATH 110 or higher</td>
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</table>
E. Environmental Science Subplans.

Students may pursue one of the following four Subplans. Each subplan has multiple options.

1. Subplan: Biology

Required Courses:
Select 12 units in consultation with your ENVS Advisor.

- BIOC 384 Foundations in Biochemistry (3) I, II
- BIOC 385 Metabolic Biochemistry (3) I, II
- BIOC 462a Biochemistry (4) I
- ECOL 302 Ecology (4) I
- ECOL 320 Genetics (4) I
- ECOL 335 Evolutionary Biology (4) II
- ECOL 406R/L Conservation Biology (4) I
- ENVS 425 Environmental Microbiology (3) I
- ENVS 426 Env. Micro. Lab (2) I

Optional Courses:
Select 6 units in consultation with your ENVS Advisor

- BIOC 462a Biochemistry (4-5) I
- BIOC 460 Gen Prot & Gen Metab Biochem (3) I, II, SUM
- ECOL 310 Living in Symbiosis (3) I
- ECOL 320 Genetics (4) I, II
- ECOL 330 Evol Animal Form & Function (3-4)
- ECOL 340 Evolution Plant Form and Function (3)
- ECOL 380 Mathemetic Models in Biology (3)
- ECOL 404R/L Biology of the Oceans (3/1) I
- ECOL 475 Freshwater and Marine Algae (4) II
- ECOL 482 Ichthyology (4) I
- ECOL 483 Herpetology (4) II
- ECOL 484 Ornithology (4) I
- ECOL 485 Mammalogy (4) I
- ECOL 487 Animal Behavior (4) I
- EIS 415R Insect Biology (3) I
- GEOS 412 Ocean Sciences (4) II
- GEOS 478 Global Change (3), I
- MCB 411 Molecular Biology (3-4) I, II
- MCB 473 Recomb DNA Methods/Appl (4) I, II
- MIC 328R Microbial Physiology (3) II
- MIC 421b Microbiological Techniques (3) I
- RNR 316 Natural Resources Ecology (3) I
- RNR 355 Introduction to Wildland Fire (3)
- RNR 384 Natural Resource Management (3)
- RNR 403 Applied Geographic Info Sys (3) I, II
- ENVS 316 Soil Fertility/Plant Nutrition (3) II
- ENVS 425 Environmental Microbiology (3) I
- ENVS 431 Soil Genesis, Morph/Taxon (3) I
- ENVS 440 Biodeg of Pollutants (3) II (even years)
- ENVS 453 Remote Sensing of the Environment (3) I
- ENVS 456A Watersheds & Ecosys Function (3) II
- ENVS 474 Aquatic Plants in the Environ (4) I
- ENVS 495F Field Studies in Namibia (6) Sum I
- ENVS 495G Rainforest Cons Biol/Ecuador (3) Winter
- WFSC 441 Limnology (4) I

**Required Courses:**
Select 12 units in consultation with your ENVS Advisor.

- ATMO 436A: Fundamentals of Atmo Sci (3) II
- ATMO 451A: Physical Meteorology I (3) I
- ATMO 441A: Dynamic Meteorology I (3) I
- ATMO 441B: Dynamic Meteorology II (3) II
- ATMO 451B: Physical Meteorology II (3) II
- GEOS 302 Stratigraphy & Sedimentation (4) I
- GEOS 342 Evolution of Earth, Ocean, Atmosphere (3) I
- GEOS 412A Ocean Sciences (4) II
- GEOS 450 Geomorphology (4) II
- GEOS 478 Global Change (3) I
- RNR 403 Appl Geog Info Sys (3) I,II
- RNR 417 (3) I,II Geog Info Sys (3) I, II
- ENVS 316 Soil Fertility/Plant Nutrition (3) II
- ENVS 401 Mgt Arid /Salt Soils (3) II (even yrs)
- ENVS 431 Soil Genesis, Morph/Taxon (3) I
- ENVS 470 Soil Physics (3) II
- ENVS 444 Applied Environ Law (3) I
- ENVS 454 Water Harvesting (3) II
- ENVS 461 Soil/Water Cons (3) Pre (odd yrs)
- WSM 460 Watershed Hydrology (3) I

**Optional Courses:**
Select 6 units in consultation with your ENVS Advisor

- ATMO 471: Synoptic Meteorology (3) I
- ATMO 421: Physical Climatology (3) I
- ATMO 469a: Air Pollution I: Gases (3) I
- ATMO 469b: Air Pollution II: Aerosols (3) II
- ATMO 489: Atmospheric Electricity (3) II
- ATMO 490: Remote Sensing of Planet Earth (3) II
- ECOL 406 R/L Conservation Biology (4) I
- ECOL 475 Fresh Water & Marine Algae (4) II
- GEOG 304 Water, Environ, & Society (3) I, II, Sum
- GEOG 397A Field Study in Geog (1) I, II, Sum
- GEOG 461 Env & Resource Geography (3) II
- GEOG 438 Biogeography (3) I
- GEOG 450 - Geomorphology (Fall 4 units)
- GEOG 453 - Glacial & Quaternary Geol (3) II
- GEOG 478 Global Change (3), I
- RA M 382 Range Plant Comm of West (3) II
- RA M 436a Grazing Ecol & Manage (2) II
- RA M 446 Veg Manage of Wildlands (3) II
- RA M 456a Rangeland Invent & Mon (3) I
- RA M 436a Grazing Ecol & Manage (2) II
- RA M 446 Veg Manage of Wildlands (3) II
- RA M 456a Rangeland Invent & Mon (3) I
- RNR 321 Nat Res – Measure (3) II
- RNR 355 Intro to Wildland Fire (3) I
- RNR 406 R/L Cons Biol (4) II
- RNR 448 Outdoor Rec Manage (2-3) II
- RNR 480 Nat Res - Policy & Law (3) II
- RNR 485 Nat Res - Econ & Planning (3) I
- ENVS 310 Residential Rain Harvesting (3) I
- ENVS 330 Intro to Remote Sensing (3), I
- ENVS 401 Mgt Arid Land/Salt Soils (3) II (even yrs)
- ENVS 425 Env Microbiol (3) I
- ENVS 426 Env Microbiol Lab (2) I
- ENVS 453 Remote Sensing of the Environ (3) I
- ENVS 454 Water Harvesting (3) II
- ENVS 456A Watersheds & Ecosys Function (3) II
- ENVS 474 Aquatic Plants & the Environment (4) I
- ENVS 495F Field Studies in Namibia (6) Sum I
- ENVS 495F Rainforest Cons Biol/Ecuador (3) Winter
- WFSC 441 Limnology (4) I
- WFSC 444 Wildlife Manage Mammal Sp (4) I
- WFSC 446 Wildlife Manage Avian Sp (4) II
- WFSC 455 R/L Fishery Manage (4) II
- WSM 452 Dryland Ecohydro & Veg Dyn (3) I
- WS M 462 Watershed Manage (3) II
- WS M 468 Wildland Water Quality (3) II
WSM 473 - Spatial Analysis & Modeling (3) I


**Required Courses:**
Select 12 units in consultation with your ENVS Advisor.

- AGTM 422 Comm Know in Ag & Life Sci (3) I
- ANTH 332 Environmental Archaeology (3) II
- AREC 476 Env Law/Econ (3) II
- GEOS 439A Intro. to Dendrochronology (4) I
- GEOS 462 Intro. to Quaternary Ecology (3) I
- GEOS 478 Global Change (3) I
- HIST 355 U.S. Environmental History (3), II
- HIST 356 Global Environmental History (3) II
- PA 481 Env Pol (3) I
- PHIL 323 Environmental Ethics (3) I, II, SUM
- RNR 480 Nat Resource Policy/Law (3) II
- STCH 250 Teaching Science (3) I, II
- ENVS 408 Technical Writing (3) II
- ENVS 415 Translating Env Science (3) II
- ENVS 444 Applied Environ Law (3) I

**Optional Courses:**
Select 6 units in consultation with your ENVS Advisor

- ANTH 307 Ecological Anthropology (3) I
- ANTH 418 Southwest Land and Society (3) II
- ANTH 424A Political Ecology (3) I
- AREC 375 Land/Water in the American West (3) II
- AREC 377 Econ of Env Resource Conserv (3) II
- AREC 464 Econ of Policy Analysis (3), I
- AREC 476 Env Law & Economics (3) II
- AREC 479 Econ of Water Management/Policy (3) II
- ATMO 336 Weather, Climate, and Society (3) I,II
- ATMO 421C Phys Climatology: Mech of Change (3) II
- COMM 411 Comm/Conflict Management (3) I,II
- ECOL 406 R/L Conserv Biol (4) I
- ED P 310 Learning in the Schools (3) I, II
- ED P 340 Research in Education (3) I, II
- ENGL 306 Advanced Composition (3) I,II
- GEOG 408 Arizona and the Southwest (3) I
- GEOG 461 Env & Resource Geog (3) II
- GEOS 478 Global Change (3) Iphy (3) II
- HIST 355 U.S. Env Hist (3) I,II
- HIST 356 Global Env Hist (3) I,II
- JOUR 472 Science Journalism (3) I
- MN E 422 Engineering Sust. Development (3) I
- PA 406 Bureaucracy, Politics, & Policy (3) I
- PA 461 Global Climate Change Policy (3) I,II
- PA 480 Formation of Public Policy (3) II
- PA 481 Env Policy (3) I
- PSYC 374 Env Psych (3) I
- RNR 440 Adaptation to Climate Change (3) II
- RNR 480 Nat Resource Policy/Law (3) II
- RNR 485 Nat Resource /Econ & Planning (4) I
- ENVS 495F Field Studies in Namibia (6) Sum I
- ENVS 495G Rainforest Cons Biol/Ecuador (3) Winter
- SOC 313 Coll Behavior/Social Movements (3) I, II
- ENVS 397A Teaching Workshop (3-4) I, II
- ENVS 444 Applied Env Law (3) I
- ENVS 495F Rainforest Cons Biol/Ecuador (3) Winter
- TTE 350 Schooling in America (3) I, II, SUM

**Required Courses:**
Select 12 units in consultation with your ENVS Advisor.

- CHEM 322 Principles of Analysis I (2) II, Sum
- CHEM 323 Principles of Analysis I Lab (1) II
- CHEM 480A Physical Chemistry (3) I, II
- HWR 431 Hydrogeology (4) I
- HWR 423 Hydrology (3) I
- ENVS 464 Environ Organic Chemistry (3) I
- ENVS 464 Environmental Chemistry (3) I
- ENVS 470 Soil Physics (3) II
- WSM 460 Watershed Hydrology (3) I

**Optional Courses:**
Select 6 units in consultation with your ENVS Advisor

- ATMO 469A Air Pollution I: Gases (3) I
- ATMO 469B Air Pollution II, (3) II (odd years)
- CHEE 370R Env & Water Engineering (3), I, II
- CHEE 370L Env & Water Engineering (1) I, II
- CHEM 404 Inorganic Chem (3) I
- CHEE 400R Water Chem for Engr (3) I
- CHEE 400L Water Chem for Engr (Lab) (1) I,II
- CHEE 478 Intro to Hazardous Waste Mgmt (3) II
- GEOS 400 Intro to Geochemistry (3) I
- MSE 412 Physical Chemistry of Materials (3) I
- PTYS 407 Chemistry of the Solar System (3) I
- ENVS 340 Environmental Chem (3) I
- ENVS 401 Mgt Arid Land/Salt Soils (3) II (even years)
- ENVS 425 Environmental Microbiology (3) I
- ENVS 431 Soil Genesis, Morph/Taxon (3) I
- ENVS 440 Biodegradation (3) II (even years)

**F. ENVS Minors.** Students must complete following prerequisites: MATH 112 College Algebra (3) II and CHEM 151 Intro Chem I (4) I, II, Sum  Note: At least 9 units should be unique to the minor.

**Environmental Science Minor** (20 units)

<table>
<thead>
<tr>
<th>GENERAL SCIENCE COURSES (14 units)</th>
<th>UPPER DIVISION COURSES (6 units)</th>
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<tbody>
<tr>
<td>MCB 181R Intro Biol (3) I</td>
<td>GEOS 400 Intro to Geochemistry (3) I</td>
</tr>
<tr>
<td>ENVS 195A Careers in Env Sci (1) I, II</td>
<td>MSE 412 Physical Chemistry of Materials (3) I</td>
</tr>
<tr>
<td>ENVS 200 Soils (3) I, II</td>
<td>PTYS 407 Chemistry of the Solar System (3) I</td>
</tr>
<tr>
<td>ENVS 201, Soils Lab (1) I, II</td>
<td>ENVS 340 Environmental Chem (3) I</td>
</tr>
<tr>
<td>ENVS 210 Fund. Env. Sci &amp; Sustain (3) I, II</td>
<td>ENVS 401 Mgt Arid Land/Salt Soils (3) II (even years)</td>
</tr>
<tr>
<td>GEOG 468 Water &amp; Sustainability (3) II</td>
<td>ENVS 425 Environmental Microbiology (3) I</td>
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<td>ENVS 431 Soil Genesis, Morph/Taxon (3) I</td>
</tr>
<tr>
<td></td>
<td>ENVS 440 Biodegradation (3) II (even years)</td>
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**Soil and Water Science Minor** (20 units)

<table>
<thead>
<tr>
<th>GENERAL SCIENCE COURSES (11 units)</th>
<th>UPPER DIVISION COURSES (9 units)</th>
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<tbody>
<tr>
<td>GEOS 251 Physical Geology (4) I, II</td>
<td>ENVS 316 Soil Fertility/Plant Nutrition (3), II</td>
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<tr>
<td>ENVS 200 Soils (3) I, II</td>
<td>ENVS 401 Mgt Arid Land/Salt Soils (3), I (even yrs)</td>
</tr>
<tr>
<td>ENVS 201 Soils lab (1) I, II</td>
<td>ENVS 431 Soil Genesis, Morph/Taxon (3), I</td>
</tr>
<tr>
<td>WSM 460A Watershed Management (3) I</td>
<td>ENVS 461 Soil/Water Cons (3) P</td>
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<tr>
<td></td>
<td>ENVS 470 Soil Physics (3), II</td>
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</tbody>
</table>

Key for course offerings by semester

Fall = I; Spring = II; Pre-session = P; Summer 1 = S 1; Summer 2 = S 2; Winter = W
# Environmental Science Major Schedule Planning Worksheet

<table>
<thead>
<tr>
<th>FIRST SEMESTER (Fall)</th>
<th>SECOND SEMESTER (Spring)</th>
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</thead>
<tbody>
<tr>
<td><strong>Recommended</strong></td>
<td><strong>Your Schedule</strong></td>
</tr>
<tr>
<td>CHEM 151</td>
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<tr>
<td>ENGLISH 101</td>
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<tr>
<td>ENVS 210</td>
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<th>FOURTH SEMESTER (Spring)</th>
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<td><strong>Recommended</strong></td>
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<tr>
<td>Tier I course</td>
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<td>MCB 181 R/L</td>
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<td>CHEM 241a</td>
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<td>MATH 122A/B</td>
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**TOTAL** 16 **TOTAL** 14 **TOTAL**
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<th></th>
<th>FIFTH SEMESTER (Fall)</th>
<th>SIXTH SEMESTER (Spring)</th>
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<tbody>
<tr>
<td>Recommended</td>
<td>Your Schedule</td>
<td>Recommended</td>
</tr>
<tr>
<td>Tier II course</td>
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<td>Tier II Course</td>
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<tr>
<td>MIC 205 A/L</td>
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<td>ENVS 305</td>
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<td>ECOL 302*</td>
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<td>ENVS 462*</td>
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<td>ENVS 420*</td>
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<td>ENVS 408*</td>
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<td>TOTAL</td>
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*or alternative

<table>
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<tr>
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<th>SEVENTH SEMESTER (Fall)</th>
<th>EIGHTH SEMESTER (Spring)</th>
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<tbody>
<tr>
<td>Recommended</td>
<td>Your Schedule</td>
<td>Recommended</td>
</tr>
<tr>
<td>Tier II course</td>
<td>3</td>
<td>ENVS 430 A/L</td>
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<tr>
<td>MATH 263*</td>
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<td>ENVS 493*</td>
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<tr>
<td>HWR 250</td>
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<td>TOTAL</td>
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*or alternative
ENVS Scholarships

Scholarship funds include the following; check with your Advisor for more details.

<table>
<thead>
<tr>
<th>Scholarship</th>
<th>Criteria</th>
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</thead>
<tbody>
<tr>
<td>Buehrer, T-PR</td>
<td>Undergrad/grad in soils/water sci. or env. sci. demonstrating academic excellence/leadership. Named by Dean with approval of OSFA.</td>
</tr>
<tr>
<td>Fuller, W.H.</td>
<td>Outstanding undergrads and grads involved in soils and water sci. to svc agriculture in AZ; Recipients must demonstrate academic excellence; good character; professional promise; Nominated by Dept Head of ENVS; OSFA apprv.</td>
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<tr>
<td>Jones, Geo-PR</td>
<td>Upper division &amp; grad students in crop production area of AG. 3.0 cum gpa. This award amount to be distributed in consultation with Plant Sciences. Approved by Dean &amp; OSFA.</td>
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<tr>
<td>Smith, H Schol-PR</td>
<td>Upper division; Soils, Water, Eng or Nutri. Schol. sub-committee nominates, Dean/OSFA approves.</td>
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Department of Soil, Water, and Environmental Science
Desired ENVS Undergraduate Outcomes

1. Be able to understand and describe the source and extent of current environmental pollution problems, and understand U.S. laws governing pollution and remediation.
2. Learn and integrate basic scientific principles involved in preventing soil and water degradation, and remediation of contaminated land and water.
3. Understand factors governing fate and transport of water and contaminants in the soil and vadose zone.
4. Have and appreciation and knowledge of the Earth with emphasis on a basic understanding of soils and water sources as critical entities in natural and human-impacted ecosystems.
5. Understand soils as natural entities and the factors of soil formation and erosion.
6. Understand important physical, chemical and biological properties of soils as they relate to their mineralogy, fertility, genesis and classification, biology and biochemistry, and land use management.
7. Understand important physical, chemical and biological properties of water with emphasis on water quality as it relates to human health, sustainable soil-plant systems and the preservation of the natural environment.
8. Understand how to properly collect soil and water samples, identify and implement appropriate analytical techniques, and interpret results.
9. Be proficient in writing a technical report or proposal in the field of Environmental Science.
10. Be able to create a hypothesis, design an experiment to test that hypothesis, analyze the results, and draw appropriate conclusions.