

# Ecology

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**Degrees offered:** Master of Science (MS) and Doctor of Philosophy (PhD) in the following departments: Aquatic, Watershed, and Earth Resources; Biology; Forest, Range, and Wildlife Sciences; and Plants, Soils, and Biometeorology

## Graduate Program

The ecology program at Utah State University is administered by the interdepartmental Ecology Center. Its goals are to promote research and graduate education in the science of ecology and to provide expert, professional information and advice for decision makers considering actions that affect the environment. The research carried out by the center's associates covers the full spectrum of ecology on several continents, but most of it is centered in the montane and desert regions of the western United States.

Students earn their degrees in ecology while maintaining residence in one of the participating departments; the center itself does not grant degrees. The candidate selects and is assigned a major professor from the department appropriate to his or her interests.

## Degree Requirements

Requirements for graduate degrees in ecology include the University and departmental degree requirements, as well as the Ecology Center requirements outlined below, which are formulated by the Ecology Center Faculty Advisory Committee. This committee is comprised of faculty representatives, designated by the respective department heads, from the departments of Aquatic, Watershed, and Earth Resources; Biology; Environment and Society; Forest, Range, and Wildlife Sciences; Geology; and Plants, Soils, and Biometeorology. The Ecology Center director chairs the committee.

The ecology MS and PhD are research degrees requiring a research thesis or dissertation. The following course requirements for each of these degrees fall into two categories. The first is a general science category. Students receiving graduate degrees in ecology are expected to have some breadth and sophistication in modern science. The second category includes ecology course requirements. These are for the most part general requirements, with the specific courses taken by each student selected by his or her graduate committee and tailored to his or her needs and professional goals.

## Ecology MS and PhD Degrees General Science Requirements

(For further details, see the USU Ecology Center website:  
<http://www.usu.edu/ecology/>.)

### Mathematics, Chemistry, Physics, and Computer Science

By its very nature, ecology must draw upon knowledge from most branches of science. As a result, at least a reasonable facility with fundamental mathematics and physical sciences must be attained by students, since these concepts have expression throughout the sciences. In order to assure a minimal comprehension in these areas, students receiving graduate degrees in ecology are required to have had the following at some point in their university careers:

1. Equivalent of mathematics through one semester of calculus.
2. Equivalent of at least a one-semester overview course in physics.
3. Chemistry through organic.
4. One year of introductory statistics and one graduate-level statistics course.

These courses are the minimum requirements for the MS and PhD degrees. The committee strongly recommends developing greater facility by taking at least a full year of calculus; one or more courses from the set of three including linear algebra, differential equations, and multi-variable calculus; and a full year of professional-level physics.

### Biology

The following are required of all ecology graduate students, and must be taken at some point during their university career:

1. Genetics or evolution, one course.
2. One course in animal physiology for students emphasizing animal ecology.
3. One course each in plant physiology and soils for students emphasizing plant ecology.

## Ecology Course Requirements

### Master of Science

1. Attendance in Ecology Seminar (AWER/BIOL/ENVS/FRWS 6870) is required each semester in residence.
2. A one-semester course in Graduate General Ecology (AWER/BIOL/ENVS/FRWS 6960) is also required.
3. One course must be taken in each of two functional (core) blocks. The three available blocks are shown on the following page.

**Doctor of Philosophy**

1. Attendance in Ecology Seminar (AWER/BIOL/ENVS/FRWS 6870) is required each semester in residence.
2. A one-semester course in Graduate General Ecology (AWER/BIOL/ENVS/FRWS 6960) is also required.
3. One course must be taken from each functional (core) block. Students continuing from the MS to the PhD degree can apply block courses taken for the MS degree to the PhD requirement. The three available blocks are shown below.

***Functional (Core) Blocks***

**1. Biophysical and Physiological Ecology**

(AWER/GEOL 6150, AWER/BMET/GEOL 6680, BMET 6500, 6800, BIOL 7750 (Topics in Biology: Comparative Animal Physiology), FRWS/SOIL 6350, FRWS 7200, SOIL 6130)

**2. Organismic, Population, and Evolutionary Ecology**

(AWER 6230/7230, BIOL 6170, 6260, 6270, 6280, FRWS 6400, 6720/7720, 7400)

**3. Community, Ecosystem, and Landscape Ecology**

(AWER 6120/7120, 6820/7820, BIOL/FRWS/SOIL 6200, BIOL 6010, 6590, FRWS 6610, 6710/7710, 6770)