

Evolution & Ecology

The evolution and ecology major focuses on the descent and interrelationships of organisms, including plants, animals, and microorganisms. The study of evolution deals with both the historical path of evolution from pre-biotic earth to the present, and the processes contributing to evolutionary change, such as natural selection, genetic drift, and historical accidents. The study of ecology concerns how organisms interact with other organisms and with their environment. Ecology is one of the key sciences having to do with the broader field of conservation biology and the maintenance of biodiversity.

Pursuing Evolution & Ecology at Ohio State

Students interested in majoring in evolution and ecology should have a good background in biology, chemistry, physics, and math. Good communication skills are also important. Students with such a background will find it much easier to complete the college-level courses in the physical and biological sciences required for the evolution and ecology degree.

All Ohio State freshman applicants are considered within a competitive admission process for the Columbus campus. The primary criteria for admission are the completion of the applicant's high school college preparatory program, performance in that program as indicated by class rank and/or grade-point average, and performance on either the ACT or SAT. Upon admission to the university, students interested in majoring in evolution and ecology should contact the coordinating advisor of the Department of Evolution, Ecology, and Organismal Biology. The department's coordinating advisor will explain the requirements of the evolution and ecology major to the student and discuss career plans and goals with the student. A member of the faculty will then be assigned as the student's major advisor. The student then meets with the advisor to develop a major program based on the student's career plans and goals.

Evolution & Ecology Requirements

A major in evolution and ecology requires preparation in chemistry, physics, math, and biology. The chemistry requirement includes general and organic chemistry. Two quarters of physics, math through calculus, and two quarters of introductory biology are required.

The evolution and ecology major requires that students complete a minimum of four core courses offered by the department in evolution, ecology, and organismal diversity, and a senior seminar in evolution and ecology. A course in molecular genetics and a course in introductory statistics are also required. Students are required to take two additional courses in organismal diversity focusing on vertebrate animals, non-vertebrate animals, or

plants, and at least one additional upper-level course in evolution or ecology. These courses are chosen based on the student's interests and may be drawn from a broad list offered within and outside of the Department of Evolution, Ecology, and Organismal Biology. The remainder of the 45 credit hours needed for the evolution and ecology major can include additional evolution and ecology courses, independent research, or courses in related areas (e.g., Anthropology, Natural Resources, Geological Sciences, Atmospheric Sciences, etc.) and must be approved by the student's major advisor.

Co-Curricular Opportunities

No other learning experience can match the value of a "hands-on" research project. Students in the College of Biological Sciences are encouraged to engage in meaningful undergraduate research opportunities. Such opportunities allow students to develop their scientific curiosity, and to discover whether a career in research is a good fit. Information about choosing an undergraduate research laboratory and faculty research interests is available on the Department of Evolution, Ecology and Organismal Biology web page and on the College of Biological Sciences web page at www.biosci.ohio-state.edu/undergrad/undergrad-research.php.

Five departmental undergraduate student clubs and an honorary student organization enhance learning opportunities and the quality of the undergraduate experience for students in the College of Biological Sciences. These clubs provide opportunities for undergraduate students to interact with faculty, discuss careers and research areas with scientists from the Ohio State campus and beyond, and participate in service activities.

Evolution and ecology students may take courses at Ohio State University's "Island Campus," Stone Laboratory. Located on Gibraltar Island in Put-in-Bay harbor on Lake Erie, this freshwater biological field station and research laboratory offers introductory and upper-level courses suitable for undergraduate students in biological sciences.

Honors & Scholars Programs

The Honors Program in the Colleges of the Arts and Sciences provides high-ability students opportunities to pursue challenging academic programs. Honors students in evolution and ecology are encouraged to meet with their faculty advisor on a regular basis and to construct an enhanced curriculum that includes honors courses, upper-division courses to meet general requirements, rigorous sequences, honors seminars, and a strong major, including a significant research experience.

For more information, check these web sites:

Evolution, Ecology & Organismal Biology:

www.biosci.ohio-state.edu/~eeob

College of Biological Sciences: www.biosci.ohio-state.edu

Ohio State: www.osu.edu

Admissions: undergrad.osu.edu

Multicultural Center: multiculturalcenter.osu.edu

Curriculum Sample

This is a sample list of the classes a student will take to pursue a degree in Evolution and Ecology. Since university students need more than specific education in a narrow field, they also will take classes to complete the General Education Curriculum (GEC). The GEC will allow students to develop the fundamental skills essential to collegiate success across major programs. Course work options satisfying the GEC often come from a variety of academic areas of study allowing students to tailor their GEC toward their interests. Note: This sample represents one of several possible paths to a degree in Evolution and Ecology. Consult the departmental web site, www.biosci.ohio-state.edu/~eeob, for more details about the major.

Freshman Year:

Biological Sciences Survey	1
General Biology	10
General Chemistry	15
Math (Calculus)	10
GEC (English Composition)	5
GEC (foreign language)	5
Freshman Seminar	1
Total hours	47

Sophomore Year:

Organic Chemistry	6
Physics	10
Statistics	5
GEC (foreign language)	15
GEC (arts and humanities)	10
Total hours	46

Junior Year:

Evolution and Ecology core	14
General Genetics	5
Vertebrate diversity	5
Major elective	5
GEC (social sciences)	5
GEC (arts and humanities)	5
GEC (second writing)	5
Elective	5
Total hours	49

Senior Year:

Plant diversity	5
Evolution or ecology	5
Research (optional)	5
Senior Seminar	3
GEC (arts and humanities)	10
GEC (social sciences)	10
Electives	10
Total hours	48

The Ohio State Scholars Programs feature residential communities for students who share academic interests and career goals. Two of the Scholars programs of interest to evolution and ecology students are the Biological Sciences and Health Sciences Scholars Programs. The Biological Sciences Scholars Program emphasizes research, with individualized advising and significant lab and field experience. The Health Sciences Scholars Program is focused on preparing students for careers in health sciences and health care.

Career Prospects in Evolution & Ecology

Career opportunities for evolution and ecology majors who do not immediately pursue advanced training include those open to other graduates of the College of Biological Sciences and Ohio State, that is, they may seek employment based on their ability to successfully undertake and complete an intellectually challenging, long-term course of study providing a broad background in the sciences. Careers particularly appropriate for students completing the evolution and ecology degree include those dealing with the environment, such as ecological assessment and research, or working in state or federal environmental agencies. Graduates might also work in zoos or aquaria, or as laboratory technicians in biological or pharmaceutical research. The evolution and ecology major would serve as a good foundation for advancement to jobs entailing a high level of responsibility, such as research scientist or manager, either through on-the-job experience or through graduate or professional study.

A major in evolution and ecology provides an excellent background in the biological sciences for a student desiring to pursue a professional degree in education, medicine, or veterinary medicine. Evolution and ecology students may choose careers as research scientists or college professors. For these careers, students must first obtain a Ph.D. degree. Most Ph.D. students, as part of their training, serve as research and teaching assistants and thereby earn a large part of their living and educational expenses while they are in graduate school. In the private sector, a master's degree may be sufficient for a research or product development position. Some students may enter high school teaching in biology by completing a master's program in education. Other students may attend a professional school in medicine, veterinary medicine, dentistry, or similar areas.

Salaries vary according to a student's area of interest, background, and placement. Students who complete graduate degrees can expect to earn substantially more than students with a bachelor's degree. Salaries in general are dependent upon a variety of economic factors and change with market trends.

For more information about careers in evolution and ecology, call or write the Arts and Sciences Career Services Office, 06 Denney Hall, 164 West 17th Avenue, Columbus, Ohio 43210-1371, (614) 292-1868.

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