

Doctor of Arts (D.A.) in Biology

Goals and Program Description

The Doctor of Arts degree in Biological Sciences is granted for proven ability and scholarly attainment in biological science instruction. The program stresses preparation for undergraduate teaching at colleges and universities and the development of research abilities that complement instruction at the college level. The program is concerned with the development of the candidate as a biologist, a scholar, and a professional educator. The program is designed to provide the student with a broad background in the biological sciences, the ability to conduct and interpret research, and excellent pedagogical skills. All D.A. students are eligible for D.A. Fellowship support, which includes full tuition, benefits, and a stipend (contact the biology graduate programs director for details). All D.A. students must demonstrate:

1. A broad background in the biological sciences and an understanding of scientific inquiry;
2. The ability to synthesize concepts of biology and to effectively communicate these concepts;
3. The ability to conduct, analyze, and critique research in biological sciences and biological sciences instruction;
4. The ability to integrate current biological and educational research into their teaching;
5. Expertise with teaching strategies appropriate for a variety of teaching and learning environments, including undergraduate research; and
6. A well-developed philosophy of education.

Admission Requirements

In addition to the departmental graduate program admission requirements, students applying to the D.A. in Biology program will normally have completed a master's degree in biology or a related discipline prior to entrance into the program. If a student enters the program without having completed a master's degree, he or she must complete this requirement in addition to the degree requirements or design and incorporate a biological research project as a major component of the dissertation project.

General and Course Requirements

Incoming D.A. students are required to take a diagnostic examination to assess the student's potential to become an effective instructor by examining the depth of his or her background in biological science and communication skills, and to help plan the Program of Study. The diagnostic exam must be completed in the student's first semester (as part of BIOL 6690 (<http://coursecat.isu.edu/search/?P=BIOL%206690>)), is conducted by an exam committee appointed by the Chair of the Graduate Committee, and results in a diagnostic exam report and a preliminary Program of Study. See the Biology Graduate Program website for guidelines and other information.

An advisory committee will guide each student in establishing his or her Program of Study based upon the student's diagnostic exam report, background, and research & teaching interests. Formation of the advisory committee will occur in the student's first semester. Typically, a full-time D.A. student on a departmental assistantship or fellowship will take 9 credit hours in fall and spring semesters and 1 credit hour in summer semesters, for a minimum of 48 credit hours beyond the master's degree, including:

BIOL 6690	Careers in Life Sciences	1
BIOL 6605	Biometry	4
BIOL 6648	Graduate Problems	4
BIOL 6693	Seminar in College Teaching	2
BIOL 6694	Advanced Study in College Teaching	4
BIOL 7700	Supervised Teaching Internship	1-9
BIOL 8850	Doctoral Dissertation	1-12

Remaining credit hours will come from coursework at the graduate level (55xx or 66xx), the majority of which must be earned from the ISU Department of Biological Sciences. Courses, seminars, special projects, or readings assigned by the student's advisory committee will provide mastery in core conceptual areas in the biological sciences, including genetics and evolution; anatomy and physiology of animals or plants; cell biology, biochemistry, or molecular biology; and ecology. All D.A. students are required to conduct supervised teaching internships (BIOL 7700 (<http://coursecat.isu.edu/search/?P=BIOL%207700>)), composed of rigorous, thoroughly planned pedagogical activities that provide an opportunity for development of skills in traditional and innovative teaching methods and for utilizing techniques, developed during the program (see Guidelines for Supervised Teaching Internships on the Biology Graduate Programs (<https://www.isu.edu/biology/degree-programs/#den65900>) website).

Research Requirements

A dissertation proposal must be completed in the student's third semester (typically fall); a written proposal will be given to the advisory committee 1 week prior to a proposal seminar (presented to the department as part of BIOL 6691 (<http://coursecat.isu.edu/search/?P=BIOL%206691>)), to be followed by an oral proposal defense (see the Biology Graduate Program website for guidelines and other information). Once the student has successfully defended the research proposal, the student is advanced to candidacy and may sign up for BIOL 8850 (<http://coursecat.isu.edu/search/?P=BIOL%208850>) (Doctor's Dissertation).

By the end of the sixth semester (or whenever coursework described in the Program of Study is complete), a D.A. candidate must sit for a Comprehensive Exam, consisting of a written and an oral portion and administered by the student's advisory committee. The exam will reflect core areas of biology, the topics covered in the education seminars, and other specific knowledge the committee determines is necessary to successfully address the student's dissertation research.

A substantial, original research project is required, culminating in a written dissertation describing the research. The dissertation must demonstrate the student's ability in independent investigation and must be a contribution to scientific knowledge. It must display mastery of the literature of the subject field and must demonstrate an organized, coherent development of ideas, with a clear exposition of results and a creative discussion of the conclusions. The dissertation examination requires a public presentation at a Biological Sciences department seminar, followed by a satisfactory oral defense to the advisory committee.

Additional details regarding the graduate timeline are available on the ISU Department of Biological Sciences website (<https://www.isu.edu/bios/>).

Code	Title	Credits
Courses required of all biology graduate students		6
BIOL 6691	Seminar	1