Applied Mathematics for the Life and Social Sciences, PhD

Learn to solve real-world problems in this innovative program that combines anthropology with statistical modeling and applied mathematics. From gene mapping in the pursuit of custom-tailored medicines to ecological forecasting models that warn of impending natural phenomenon, our acclaimed faculty will prepare you for an exciting cross-disciplinary career.

Program Description

Degree Awarded: PHD Applied Mathematics for the Life & Social Sciences

The PhD program in applied mathematics for the life and social sciences focuses on training researchers to analyze scientific questions at the intersection of the mathematical, life and social sciences. Graduates of the program will be making innovative and far-reaching scientific contributions that rely on cutting-edge computational mathematical and modeling approaches. This program focuses on producing quantitative scientists and applied mathematicians conducting high-level, transdisciplinary research. The faculty includes mathematicians, statisticians, theoretical biologists and social scientists from five different schools at Arizona State University.

There is a high demand for first-rate scientists, researchers and faculty interested in meeting the challenges faced by communities in the 21st century. Institutional research and planning programs create space and opportunity to address such challenges on a global scale. The health, environmental and natural resource challenges in Arizona and the nation are urgently in need of a large pool of researchers with these transdisciplinary skills.

There are three tracks a student can follow. Applied mathematics is a more in-depth focus on the tools applied to the life and social sciences such as dynamical systems, computational and numerical methods, simulation and mathematical analysis. Life sciences focuses on understanding the tools for representing the structure and operation of complex biological and ecological processes. Social sciences focuses on understanding the tools for representing the structure and operation of complex social systems and processes.
By offering courses that enhance transdisciplinary exchanges and collaboration among the faculty and students interested in addressing questions of social relevance, the program builds upon foundations already established in:

- bioinformatics
- computational sciences
- ecology
- genomics
- mathematical analysis
- mathematical epidemiology
- nonlinear dynamics
- population dynamics
- social science fields

**At a Glance**

- **College/School:** College of Liberal Arts and Sciences
- **Location:** Tempe campus

**Degree Requirements**

84 credit hours, a written comprehensive exam, an oral comprehensive exam, a prospectus and a dissertation

Students entering with a master's degree in a related field may be granted up to 30 credit hours toward the 84 credit hour total required for the doctorate degree. This leaves 30 credit hours of coursework, 12 credit hours of research credit and 12 hours of dissertation credit (54 credit hours total) to be earned post-admission.

Students entering the program without a master's degree must earn an additional 30 hours of graduate credit, produce a research portfolio which is formally evaluated by a faculty committee and present that research in a public forum before continuing in the later stage of the doctoral program.

All students must maintain a 3.20 (scale is 4.00 = "A") average GPA in their courses and complete degree requirements per the program's satisfactory progress policy.

All students are required to complete a sequence of core courses. The core competencies consist of:

- core math skills
- deterministic modeling or computational methods
Admission Requirements

Applicants must fulfill the requirements of both the Graduate College and the College of Liberal Arts and Sciences.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree from a regionally accredited institution. A master's degree in the social sciences (e.g., anthropology, gender studies, geography, sociology), life sciences or related fields (e.g., biology, ecology, genomics), applied mathematics, mathematics or statistics is preferred.

Applicants must have a minimum of a 3.00 cumulative GPA (scale is 4.00 = "A") in the last 60 hours of a student's first bachelor's degree program, or applicants must have a minimum of a 3.00 cumulative GPA (scale is 4.00 = "A") in an applicable master's degree program.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts
3. personal statement outlining educational and professional goals
4. current curriculum vitae or resume
5. GRE scores
6. three letters of recommendation
7. proof of English proficiency

Additional Application Information

An applicant whose native language is not English (regardless of current residency) must provide proof of English proficiency.

Applicants may submit an optional scholarly writing sample of 20 to 30 double-spaced pages, to be included in their application materials.

Prior to admission, students should have completed, at the undergraduate junior or senior level, a minimum of the following:

1. 15 credit hours of mathematics or statistics
2. nine credit hours of life sciences and social sciences coursework at the senior or college graduate level
3. no fewer than three credit hours each of life sciences and social sciences coursework

Application Deadlines

Fall

Contact Information

School of Human Evolution & Social Change | SHESC 233
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Admission Deadlines