

Complex Adaptive Systems Science, PhD

GFCASPHD

Do you find yourself contemplating how complex human and natural systems are, and the many ways people and nature are interconnected and influence each other? Become an advocate and leader for a new kind of science where you can gain a better understanding of those complexities with the potential to positively transform society.

Program description

Degree awarded: PHD Complex Adaptive Systems Science

Complex adaptive system concepts and methods serve as a common language to fuse different intellectual disciplines, enabling the transdisciplinary collaborations needed to come to grips with current and future intellectual and societal challenges. Rather than focus on specialized understanding of the characteristics of a limited suite of phenomena, as is common in most academic disciplines, the PhD program in complex adaptive systems science emphasizes the interconnections among phenomena comprising dynamic, evolving systems. Many of the systems most critical to human life and society can be studied and understood in this way: from cells to organisms to populations to ecosystems to societies to technologies. Graduates of this program will be fluent in the language, concepts and methods of complexity needed to apply this innovative and valuable approach to understanding and addressing challenges of the complexly coupled human and natural world in which all people live.

ASU is already an international leader in complex adaptive systems science, with a growing constellation of research centers, and now the first-of-its-kind School of Complex Adaptive Systems. By broadly embedding an understanding of complex adaptive systems approaches into scientific practice, students in the program gain the potential to transform science and society --- furthering ASU's global leadership in this emerging academic discipline. Students in the program develop skills in theoretical foundations, modeling, problem solving and critical thinking. The program promotes the development and testing of robust theory with sophisticated methods in a wide array of research settings, grounded in concrete examples and applications to provide a deeper understanding of the nature and dynamics of complex adaptive systems.

At a glance

- College/School: [College of Global Futures](#)
- Location: [Tempe](#)

Degree requirements

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

Required Core (3 credit hours)

CAS 570 Fundamentals of CAS Science (3)

Focus Area (6 credit hours)

Electives (51 credit hours)

Research (12 credit hours)

CAS 792 Research (12)

Culminating Experience (12 credit hours)

CAS 799 Dissertation (12)

Additional Curriculum Information

Students select a focus area from either domain science or transdisciplinary bridging.

Domain science: Students will enhance their complex adaptive systems education with in-depth training in a social, life or physical science, or an engineering field. They are expected to be able to make significant contributions to their chosen domain science field from the perspective of complex adaptive systems science.

Transdisciplinary bridging: Students will enhance their complex adaptive systems education with advanced training in computer science and data science. The goal of this focus is to enable students to use a complex adaptive systems perspective and framework as a bridge to enable intellectual fusion across multiple disciplines by applying advanced knowledge of complex adaptive systems theory, data science and information technology.

Admission requirements

Applicants must fulfill the requirements of both the Graduate College and the College of Global Futures.

Applicants are eligible to apply to the program if they have earned a bachelor's or master's degree in any field from a regionally accredited institution. The school encourages applicants with diverse educational backgrounds and experiences that are relevant to the school's core objectives.

Applicants must have a minimum cumulative GPA of 3.25 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, or a minimum cumulative GPA of 3.25 (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. letter of intent
4. writing sample
5. three letters of recommendation
6. resume or curriculum vitae
7. proof of English proficiency

Additional Application Information

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

The statement of intent should not exceed 600 words and should describe how the applicant's background will contribute to success in the program, describe how completion of the degree will support the applicant's long-term career goals, and explain why the applicant is applying to the College of Global Futures and, more specifically, the doctoral program in complex adaptive systems science. The statement of intent should elaborate on key research questions the applicant wishes to address or problems to solve as part of the plan of study, and it should identify potential faculty advisors.

Letters of recommendation must be from three people who can attest to the applicant's academic and professional achievements. At least one letter should be academic in nature.

Applicants will need to provide a writing sample that demonstrates graduate or professional-level writing.

Tuition information

When it comes to paying for higher education, everyone's situation is different. Students can learn about [ASU tuition and financial aid](#) options to find out which will work best for them.

Application deadlines

Fall

[expand](#)

Global opportunities

Global experience

Study abroad is encouraged for graduate students. Nearly all of the College of Global Futures faculty-directed programs offer graduate credit. In addition, the Global Education Office offers more than 50 program opportunities, with programs on every continent.

Faculty-directed programs tend to be the best fit for graduate students; taking courses with ASU professors over the summer or during academic breaks offers students close mentorship and professional network growth in many fields of study while they earn ASU credit. Exchange program participation is also possible with careful planning.

Students can find programs specific to their interests on the [College of Global Futures Study Abroad](#) webpage, and additional opportunities and information on the [ASU Global Education Office](#) website. These sites also include additional information about applying for funding to support global travel.

Graduate students are also encouraged to apply for funding for international research, study and professional development through [ASU's Lorraine W. Frank Office of National Scholarships Advisement](#).

Career opportunities

This program is the first of its kind in the U.S., and graduates will have multiple career opportunities. Complex adaptive systems science is an important part of solutions in fields such as sustainability, social and ecological sciences, life sciences, biomedical sciences, geophysical sciences and computer science. It is equally foundational for understanding risk and security.

Contact information

[School of Complex Adaptive Systems](#) | ECA A101

complexity@asu.edu | 480-727-9746

[Admission deadlines](#)