

# Systems Engineering, PhD

ESSYSPHD

## Program description

### **Degree awarded: PHD Systems Engineering**

The PhD in systems engineering is a transdisciplinary graduate program offered by the School of Manufacturing Systems and Networks.

The program is aimed at advancing the understanding of complex engineering systems and where these systems are inclusive of technological aspects, as well as social, cultural, environmental and other interacting components that impact the input, output and interactions within a system. The program prepares students to identify, model, analyze, interpret, optimize and manage the multidimensional interactions of the ever-increasing complexity of modern technological and societal challenges.

A typical incoming student in this doctoral program would have a master's degree in engineering or related discipline. Applicants with strong research background may be admissible directly from a bachelor's degree in engineering or related discipline. The core curriculum provides the foundation for systems thinking, systems identification, systems modeling and systems design and analysis using diverse disciplinary methodological approaches. Students in this program use their capacity to evaluate complex systems and a depth of mathematical maturity to study problems for which complexity is impeding progress.

## At a glance

- **College/School:** [Ira A. Fulton Schools of Engineering](#)
- **Location:** [Polytechnic](#)

## Degree requirements

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

**Required Core (9 credit hours)**

EGR 602 Principles of Independent Research (3)

EGR 608 Advanced Simulation (3)

EGR 611 Complex Engineering Systems (3)

**Technical Electives (3 credit hours)****Electives and Research (60 credit hours)****Culminating Experience (12 credit hours)**

EGR 799 Dissertation (12) or

MFG 799 Dissertation (12) or

RAS 799 Dissertation (12)

**Additional Curriculum Information**

When approved by the student's supervisory committee and the Graduate College, this program allows 30 credit hours from a previously awarded master's degree to be used toward this degree. If students do not have a previously awarded master's degree, the 30 credit hours of coursework are made up of electives to reach the required 84 credit hours.

Students are required to take 12 credit hours of EGR 792, MFG 792 or RAS 792 as part of their research coursework.

Elective coursework should be directly in support of the student's research as advised by the supervisory committee.

Students with a BS degree coming into the doctoral program in systems engineering must complete at least nine credit hours of approved mathematics courses after the completion of their bachelor's degree. Students select appropriate elective courses in consultation with the academic unit.

## **Admission requirements**

Applicants must fulfill the requirements of both the Graduate College and the Ira A. Fulton Schools of Engineering.

Applicants are eligible to apply to the program if they have earned a minimum of a bachelor's or master's degree in engineering from a regionally accredited institution, or if they have earned the equivalent of a U.S. bachelor's degree from an international institution that is officially recognized by that institution's country in engineering, physical sciences, mathematics or a similar field.

Applicants without a master's degree in engineering or a closely related field must have a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in the last 60 hours of their first bachelor's degree program, coupled with a record of research or leadership accomplishments (or both). Applicants with a master's degree in engineering or a closely related field must have a minimum cumulative GPA of 3.00 (scale is

4.00 = "A") in the applicable master's degree program. Exceptional undergraduates are encouraged to apply after completion of a BS degree.

All applicants must submit:

1. graduate admission application and application fee
2. official transcripts from each college or university attended
3. two letters of recommendation
4. GRE scores
5. statement of purpose
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. Applicants should see the [graduate admission services website](#).

[Global Launch](#) at ASU offers an online alternative to standardized testing for international students who are seeking admission to ASU and need proof of English proficiency.

A GRE waiver may be requested if the applicant received a bachelor's degree in a related field with a cumulative GPA of 3.00 or better from an institution in the U.S. Engineering program graduates must have a bachelor's degree from an ABET-accredited program. Applicants should email [msngrad@asu.edu](mailto:msngrad@asu.edu) to request a waiver. An approved waiver does not guarantee admission.

ASU does not accept the GRE® General Test at home edition.

Unofficial transcripts may be submitted at time of application. If admitted, applicants must then submit official transcripts to ASU graduate admission services.

## **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**

**Spring** [expand](#)

[expand](#)

## **Career opportunities**

Graduates of the doctoral program in systems engineering are prepared for industry careers in areas such as:

- automotive systems
- energy systems, including alternative energy and grids
- manufacturing
- robotics

## Contact information

School of Manufacturing Systems and Networks | TECH 104  
msngrad@asu.edu | 480-727-2097