

# Modern Energy Production and Sustainable Use, MS

ESMEPSUMS

Where do sustainable engineering and renewable energy production meet? How can you apply your technical engineering skills to creating solutions for complex energy systems? Learn to demonstrate practical, proven capabilities and interdisciplinary thinking by mastering skills related to creation, storage and use of renewable energy.

## Program description

### **Degree awarded: MS Modern Energy Production and Sustainable Use**

In the MS program in modern energy production and sustainable use, students are provided with the skills and knowledge they need to address the challenges associated with the different modalities in energy production and storage. They are encouraged to work with instructors in the program who are conducting research.

## At a glance

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

## Accelerated program options

This program allows students to obtain both a bachelor's and master's degree in as little as five years. It is offered as an **accelerated bachelor's plus master's degree** with:

[Mechanical Engineering, BSE](#)

[Mechanical Engineering \(Energy and Environment\), BSE](#)

Acceptance to the graduate program requires a separate application. Students typically receive approval to pursue the accelerated master's during the junior year of their bachelor's degree program. Interested students can learn about eligibility requirements and [how to apply](#).

## Degree requirements

30 credit hours and a portfolio

### Required Core (12 credit hours)

Students choose four courses:

ALT 535 Applied Photovoltaics (3)

CHE 573 Fuel Cells and Biofuel Cells (3)

CHE 578 Biomass Energy Conversion Technology (3)

MAE 576 Energy Efficiency (3)

MAE 579 Wind Energy (3)

MAE 582 Renewable Energy: Mechanical Systems (3)

MSE 560 Nanomaterials in Energy Production and Storage (3)

SEC 501 Solar Engineering and Commercialization I (3)

### Mathematics Elective (3 credit hours)

### Sustainability Electives (6 credit hours)

### Technical Electives (9 credit hours)

### Culminating Experience (0 credit hours)

portfolio (0)

### Additional Curriculum Information

The modern energy production and sustainable use program requires a nonthesis portfolio.

Students should see the academic unit for a list of approved elective coursework. Other coursework may be used with approval of the academic unit.

During the last semester of their program, students submit a portfolio that contains at least two projects from previous engineering coursework, along with a paper explaining the projects. Students must successfully complete the portfolio requirements to pass the culminating experience.

## 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 bachelor's or master's degree in any engineering, physical science or related field from a regionally accredited institution.

Applicants 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 or a minimum cumulative GPA of 3.00 (scale is 4.00 = "A") in an applicable master's degree program.

Applicants are required to submit:

1. graduate admission application and application fee
2. official transcripts
3. three letters of recommendation
4. professional resume
5. personal statement
6. 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 minimum score required on the TOEFL iBT is 90.

## **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](#)

## **Program learning outcomes**

Program learning outcomes identify what a student will learn or be able to do upon completion of their program. This program has the following program outcomes:

- Differentiate key concepts of energy generation and sustainable energy use within energy-centric engineering and demonstrate their understanding of those concepts on written exams/presentations.
- Differentiate key concepts within energy storage and demonstrate their understanding of those concepts on the written exam.
- Demonstrate problem solving skills in an engineering-related field.

## **Career opportunities**

This program prepares students for professional careers in transdisciplinary areas of renewable energy generation and storage, energy-saving materials, manufacturing, sustainable transportation and related fields in industry, government and educational institutions.

Professionals with a modern energy production and sustainable master's degree have strong opportunities at all levels in various energy-related technologies with private and government entities. The skills learned in this degree program prepare graduates for a career as a practicing engineer.

Career examples include:

- development engineer
- process engineer
- product engineer

## Contact information

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