

# Data Science, Analytics and Engineering (Electrical Engineering), MS

ESDSEEEEMS

Learn the data science skills needed for the modern economy while enhancing your expertise in electrical engineering in this distinct master's degree program. You will take high-demand courses and work with your colleagues to solve client-driven data science problems.

## Program description

### **Degree awarded: MS Data Science, Analytics and Engineering (Electrical Engineering)**

Data scientists are consistently ranked among the top jobs in the USA, and there is an increasing need for all engineers to make use of data science tools like statistics, machine learning, artificial neural networks and artificial intelligence. However, the majority of engineering occupations require subject matter expertise beyond data science.

The MS program in data science, analytics and engineering with a concentration in electrical engineering provides an advanced education in high-demand data science and electrical engineering. A focus on probability and statistics, machine learning, data mining and data engineering is complemented by electrical engineering-specific courses to ensure breadth and depth in data science and electrical engineering.

## 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:

### Electrical Engineering, 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 thesis, or

30 credit hours including the required capstone course (FSE 570)

### **Required Core (9 credit hours)**

STP 502 Theory of Statistics II: Inference (3), EEE 554 Probability and Random Processes (3) or DSE 501 Statistics for Data Analysts (3)

CSE 511 Data Processing at Scale (3), CSE 512 Distributed Database Systems (3) or IFT 530 Advanced Database Management Systems (3)

Choose one from the following:

CSE 572 Data Mining (3)

CSE 575 Statistical Machine Learning (3)

EEE 549 Statistical Machine Learning: From Theory to Practice (3)

IEE 520 Statistical Learning for Data Mining (3)

IFT 511 Analyzing Big Data (3)

IFT 512 Advanced Big Data Analytics/AI (3)

MAE 551 Applied Machine Learning for Mechanical Engineers (3)

STP 550 Statistical Machine Learning (3)

### **Concentration (9 credit hours)**

EEE 554 Probability and Random Processes (3)

Choose one of the following:

EEE 511 Artificial Neural Computation (3)

EEE 551 Information Theory (3)

EEE 560 Mathematical Foundations of Machine Learning (3)

EEE 589 Convex Optimization (3)

One additional course from an approved list

### **Electives (6 or 9 credit hours)**

### **Culminating Experience (3 or 6 credit hours)**

EEE 599 Thesis (6)

FSE 570 Data Science Capstone (3)

## Additional Curriculum Information

Students should consult the academic unit for a list of approved electives and concentration course requirements.

Courses selected for Required Core or Concentration may not be used as elective coursework on the same plan of study. Students should check with their academic advisor to ensure that the total number of credit hours of their plan of study is equal to 30.

## 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 computing, engineering, mathematics, statistics, operations research, information technology or a 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. written statement
4. professional resume
5. 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 demonstrate proficiency in the English language by scoring at least 90 on the TOEFL iBT, 7 on the IELTS, or 115 on the Duolingo English test.

All applicants must demonstrate relevant coursework or experience in the following three areas:

- familiarity with Matlab, Python, SQL, R, or other relevant programming skills (in the professional resume)
- undergraduate linear algebra (e.g., MAT 242 Elementary Linear Algebra)
- undergraduate statistics or probability (e.g., IEE 380 Probability and Statistics for Engineering Problem Solving, STP 420 Introductory Applied Statistics, STP 421 Probability, EEE 350 Random Signal Analysis)

In addition, applicants without an undergraduate degree in computer science, computer engineering, software engineering, information technology, industrial engineering, operations research, statistics or a related computing field must show evidence (in the professional resume) of at least one of the following certifications or equivalent experience:

- AWS-certified cloud practitioner
- Google data analytics certificate
- Google IT support certificate

## 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

Electrical engineers with a background in data science can pursue opportunities in a variety of fields to manage, analyze and extract data from large data sets, including in the following industries:

- circuit design
- energy and power systems
- semiconductor fabrication
- signal processing
- telecommunications

## Contact information

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