



www.aucegypt.edu

Department of Mathematics and Actuarial Science
AUC New Cairo
AUC Avenue • P.O. Box 74 • New Cairo, 11835, Egypt
tel 20.2.2615. 2763

<https://sse.aucegypt.edu/programs/undergraduate/data-science>



Facilities and Specialized Laboratories

The Department of Mathematics and Actuarial Science offers its students, professors and teaching assistants a variety of services and facilities in order to enhance their academic experience. The computer lab is open on weekdays from 8:30 am to 7:00 pm. The computer lab provides computers with internet access, Microsoft Office standard programs and specialized mathematics software. Students are eligible to receive a license to install the software required for their courses on their personal computers in order to be able to finish their assignments conveniently. In addition, lab users can have personalized accounts for storing their documents and files and can use the printing services in the lab.

Extracurricular Activities

Mathematical Learning Center: A facility staffed by teaching assistants for students in need of additional mathematics help.
Annual Math Competition: Open to undergraduate students at AUC and other local universities.

Why Join AUC's Data Science Program?

AUC provides a quality, professional education that advances the ideals of American liberal arts and lifelong learning. As freedom of academic expression is fundamental to this effort, AUC encourages the free exchange of ideas and promotes open and ongoing interaction with scholarly institutions throughout Egypt and other parts of the world.

The University environment is designed to advance proficient use of the tools of learning as well as students' thinking capabilities, language and personal skills.

Students are trained by outstanding faculty members with PhDs from leading universities in the United States, Canada, Europe and Egypt.

AUC has one of the best English-language libraries in the Middle East, equipped with state-of-the-art information access technologies.

The AUC campus includes up-to-date computer facilities and software, as well as well-equipped experimental laboratories in nearly every specialty.

Students have access to a rich and diverse student life with a broad array of extracurricular activities. AUC New Cairo offers world-class educational resources on a spacious, technologically advanced and environmentally sensitive campus.



UNDERGRADUATE DATA SCIENCE PROGRAM

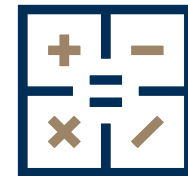
Bachelor of Science in Data Science



“The Bachelor of Science in Data Science at AUC is – to our knowledge – the first undergraduate program of its kind in Egypt and the region to cater to the highly increasing regional and global market demand for data scientists. This multidisciplinary program is hosted by the Department of Mathematics and Actuarial Science, but brings together the expertise of a wide spectrum of faculty members from various departments in the School of Sciences and Engineering.”

Ali Hadi

Founder of AUC’s Data Science Program



The Data Science Program is administered by a council of members from several departments, including:

Biology
Computer Science and Engineering
Chemistry
Mathematics and Actuarial Science

The advances in communication and information technologies have given rise to the availability of huge datasets. The datasets contain a wealth of knowledge. Data science is the study of the generalizable extraction of knowledge from data. It is a new multidisciplinary field. A data scientist is a professional who is able to collect and analyze the current and future types and sizes of data and solve the kind of problems associated with them.

Being a data scientist requires an integrated skill set spanning mathematics, probability, statistics, machine learning, computational science and programming languages (such as R and Python), as well as a good understanding of real-world problem formulation and effective solutions. These areas are most relevant and needed for a very strong program in data science.

The data science field is currently experiencing rapid growth due to the availability of huge and complex real-world data. The demand for data science education has also been increasing exponentially. Accordingly, we need to move away from the traditional way of teaching statistics to meeting the needs of the modern world for data scientists who can use modern analytic techniques and tools for analyzing data, especially big data.

“The demand for data science education is surging and traditional courses offered by statistics departments are not meeting the needs of those seeking training.” (Hicks and Irizarry, 2017).

Academic Offerings

The Department of Mathematics and Actuarial Science offers three undergraduate programs leading to the following degrees:

- Bachelor of Science in Actuarial Science*
- Bachelor of Science in Data Science
- Bachelor of Science in Mathematics*

In addition, it offers the following three minors:

- Minor in Mathematics*
- Minor in Applied Probability and Statistics*
- Minor in Financial Mathematics*



Why should you pursue the Bachelor of Science program in data science?

- The demand for data scientists is currently notably greater than the supply. Data scientists are in high demand, both locally and globally.
- You can enjoy making good use of your mathematical and problem-solving skills in a dynamic business environment and be nicely rewarded for success.
- The Department of Mathematics and Actuarial Science prepares you for four of the 10 best jobs as ranked in 2018 by CareerCast.com:
 - Mathematician (No. 2)
 - Statistician (No. 5)
 - Data Scientist (No. 7)
 - Actuary (No.10)

Prospective Job Fields and Employers

- Business analytics, machine learning and business intelligence
- National and multinational CIT (communication and informational technology) companies
- Banks, investment and other financial institutions
- Consulting firms
- Statistical and mathematical research centers



*For more information about these programs as well as the opportunities to double major in Mathematics and other engineering disciplines, please see the Bachelor of Science in Mathematics Brochure.

Admission Requirements

Students are admitted to the data science major either upon admission to AUC or after successful completion of criteria courses. High-school students with a mathematics or science background are accepted based on their competitive high-school grades and the capacity of the program.

- Only 20 students are admitted every year. The total enrollments in four years is expected to be between 75 and 80 students.
- Students can declare the major at the gate or within their first three semesters at AUC.
- The minimum requirements for declaration of a major in data science are the same as those for actuarial science (A minimum GPA of 3.3 and criteria courses).

Graduation Requirements

A total of 130 credits are required for the Bachelor of Science in data science as follows:

Requirements:	Credits
Core	40
Concentration:	
Mathematics	21
Data Science:	48
Electives:	21

Accreditation

AUC is accredited in the United States by the Middle States Commission on Higher Education (MSCHE).

A wide spectrum of programs are ABET accredited and approved by the Supreme Council for Egyptian Universities.

Research

Research activities in the Department of Mathematics and Actuarial Science cover a wide range of areas in pure and applied mathematics, actuarial science, statistics, data science and other related fields.

Details concerning individual research interests and recent activities are found on the personal webpages of faculty members. Areas of active research include mathematical programming and optimization, queuing and reliability models,

history of mathematics, computation of graphical models, topology, category theory, logic, model theory, robust statistics, computational statistics, visualization of high dimensional data, survival analysis, Bayesian inference in reliability, regression analysis, time series, multivariate analysis, fatigue and lifetime data analysis, extreme value distributions, machine learning, artificial intelligence, algorithm analysis, simulation and Bayesian neural and functional networks.

