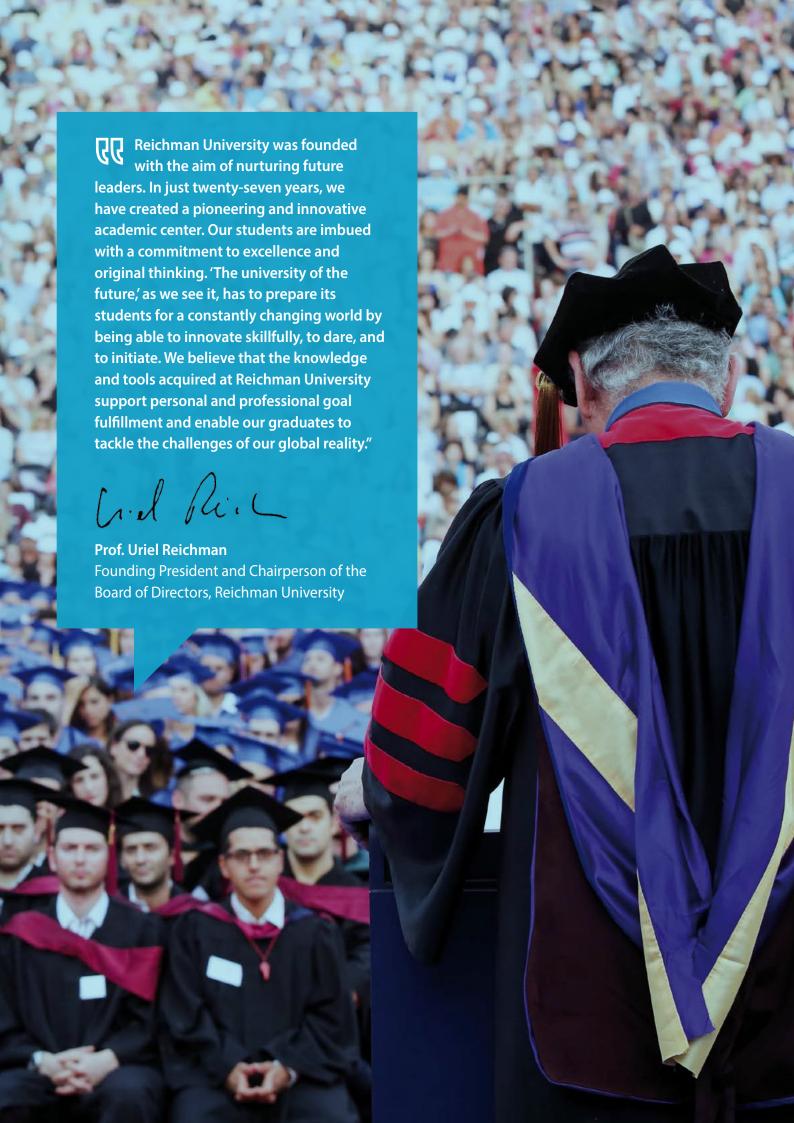




EFI ARAZI SCHOOL OF COMPUTER SCIENCE

2023-2024





PROGRAM

The Efi Arazi School of Computer Science has built an innovative and intensive M.Sc. program in Machine Learning & Data Science, aimed at providing a deep theoretical and practical understanding of machine learning and data-driven methods. The program will address foundations and techniques, as well as application domains and use cases.

In recent years, data science methodologies have become the bonding language and foundational tools of scientific and industrial research. Machine learning and data-driven methods have developed considerably, and now penetrate almost all areas of modern life. This trend has deeply affected computer science, medical science, life sciences, and biology, as well as finance, chemistry, physics, and social sciences. Gathering, analyzing, and interpreting data using modern, data-driven, and machine learning methods are now part of the daily routine in many parts of academia and industry alike. Clearly, the vision of a data-driven world presents many exciting challenges to data experts. These include developing algorithms and methods to deal with data, exploiting new cloud-based platforms, deploying and taking advantage of software solutions, and handling information diversity at scale, as well as communicating, interpreting, and leveraging the results obtained through analysis pipelines and processes.

To answer the call of the growing market demand for data scientists, the Efi Arazi School of Computer Science is offering a unique M.Sc. program for students with a strong quantitative background and education. Students will attend frontal lectures, recitations, and seminars, and will lead and participate in projects of different scales. Through these projects, students will gain hands-on experience in various data science and machine learning domains. Project participation will be in collaboration with academia, both internally and externally, and with industry.

The conducive learning environment at the Efi Arazi School of Computer Science provides a community, as well as team-up opportunities, for students, scientists, and researchers from the entire scientific spectrum. The program will expose our students to industry and other activities that parallel their academic training.

Upon completing our M.Sc. program in data science, our graduates will have gained a strong background in the science and technologies that form the basis to the growing activity in data analysis, data collection and processing, and related usage. They will have expertise in programming for data science using Python, including skills in using programming in statistical analysis and machine learning. They will have acquired deeper specialization in data science, based on the elective courses of the program: Infrastructure Courses, Big Data and Databases, Neural Networks and Deep Learning, Statistics, Optimization, Scientific Computing, Modern Bioinformatics and Environmental Informatics, Computer Graphics and Vision, Numerical Analysis, and Biomedical Data Science.

The program also opens a new path for students with a strong mathematical background and programming experience, but without a Computer Science degree. It will provide these students with the opportunity to become skilled and knowledgeable data scientists. (Candidates without Computer Science degrees will need to successfully complete Computer Science preparatory courses.)

Ultimately, Reichman University's Machine Learning and Data Science program, at the School of Computer Science, will endow our students with the knowledge, the market understanding, and the scientific and technical skills required to work creatively and effectively in these domains.





Students are required to take 36 credits: 21 credits of mandatory core courses including a final project, 3 credits of mandatory electives, and 12 credits from a list of general computer science electives. Any student with an insufficient background in either computer science or math will be required to take additional preparatory courses, to be determined by the Admissions Committee. All mandatory courses, and some elective courses, are taught in English. Some courses may only be taught in Hebrew.

MANDATORY CORE COURSES (16 credits)

- Statistics & Data Analysis
- · Intro to Machine Learning
- · Intro to Big Data Platforms & Data Visualization
- · Intro to Neural Networks & Deep Learning
- · One of the following advanced courses:
 - Advanced Machine Learning
 - Advanced Statistics
 - Advanced Algorithms

ELECTIVE COURSES (15 credits)

Students are required to take at least 3 credits from the highlighted courses below. It is possible, and even recommended, to take more.

MACHINE LEARNING AND DEEP LEARNING

- Advanced Topics in Deep Learning
- Recommendation Systems
- Data Streaming & Online Algorithms
- Advanced Topics in Machine Learning
- Unsupervised Learning Methods
- · Intro to Reinforcement Learning

BIG DATA AND STATISTICS

- · Cloud Computing
- Advanced Big Data Platforms
- · Application of Machine Learning on Big Data Platforms
- Advanced Topics in Statistics & Data Analysis

APPLIED MACHINE LEARNING AND DATA SCIENCE

- · Scientific Computing
- Bioinformatics
- · Numerical Analysis
- Computer Graphics
- Computer Vision
- · Natural Language Processing
- Image Processing
- Topics in Data Mining & Genomics

INFRASTRUCTURE AND COMPUTER SCIENCE GENERAL COURSES

- · Distributed Algorithms
- Cryptography
- Advanced Cryptography: Secure Computation
- Network Security
- · Advanced Algorithms

PREPARATORY COURSES FOR NON-COMPUTER SCIENCE GRADUATES

- Intro to Computer Science & Programming in Python
- · Intro to Operating Systems & Databases
- Data Structures, Algorithms & Complexity
- Linear Algebra for Data Science

MANDATORY FINAL PROJECT (5 credits)

 Final Project: Independent research and development with industry and/or academic collaboration. Can be extended to a thesis.

Reichman University reserves the right to cancel, alter, or expand the academic programs offered.

REICHMAN UNIVERSITY

FAST FACTS

Israel's first and only private university

Over 30 research institutes at Reichman University

Over 35,000

graduates worldwide

The Career Center

aims to assist alumni in integrating into the professional market, as well as to assist employers who are seeking to recruit suitable candidates



The Israeli Council for Higher Education granted Reichman University permission to confer

doctoral degrees

#

Over **2,500**

Raphael Recanati International School students from over countries make up

1/3 of the Reichman University student body



REICHMAN UNIVERSITY: THE MOST INTERNATIONAL UNIVERSITY IN ISRAEL

Reichman University created new, academic

interdisciplinary concepts in the fields of

entrepreneurship, counter-terrorism and sustainability - models that are being implemented around the world



Over 300 Lone Soldiers studying for full degrees

Reichman University's Alumni Association,

with over 35,000 graduates, forms a professional and social alumni community that promotes



networking from different countries, and strengthens the pride and belonging to Reichman University and the alumni

Ranked **10.** in Israel for our treatment of **IDF reservists**



APPLICATION PERIOD

The application period for the 2023-2024 academic year is **November 15, 2022 - August 31, 2023**

The application period for students required to take preparatory courses ends on *June 30, 2023*.

Due to the competitive nature of the admissions process, we recommend that applicants prepare their application well in advance of the deadlines. Reichman University reserves the right to impose stricter criteria upon applicants during the late application period or upon applicants who submit material late. Preference will be given to applicants who submit all required material during the regular application period.

ADMISSION CRITERIA

- Completed undergraduate degree from a recognized academic institution
- One of the following:
 - B.Sc. in Computer Science, with a GPA of at least 85%
 - B.Sc. in other fields, with a GPA of at least 90%
- Non-Computer Science students will be required to take the following 3 preparatory classes: Introduction to Computer Science and Programming in Python; Data Structures Algorithms and Complexity; Introduction to Operating Systems and Databases.
- Students with an insufficient quantitative background will be required to complete the following prerequisite courses: Linear Algebra for Data Science; Calculus A/B; Probability Theory
- The academic program of the Raphael Recanati International School is taught entirely in English. Graduates of schools in which English was not the primary language of instruction are required to pass the TOEFL (Test of English as a Foreign Language) or an equivalent test, such as the IELTS (International English Language Testing System) or the Israel Psychometric Examination.

TOEFL www.toefl.org

APPLY ONLINE AT

https://forms.runi.ac.il/#/Public/ Registration?lang=en&form=MA

ONLINE APPLICATION

Please note your application must include:

- Official transcripts of previous academic undergraduate and graduate studies. Transcripts must bear the official stamp of the issuing institution. If you do not send the original transcript, scanned photocopies of the original documents will be accepted if properly notarized.*
- Copy of passport or identity card
- Curriculum Vitae (CV)

Note that candidates may be interviewed.

* An official, notarized English translation must be submitted for all transcripts not originally issued in English or Hebrew.

TUITION & FEES

- The application fee is 300 NIS (non-refundable)
- The down payment is NIS 8,000. Applicants must pay this fee to secure their place in the program after being accepted. Once the down payment has been received the applicant's place is secured and confirmed.
- The tuition for the entire M.Sc. in Machine Learning & Data Science is NIS 74,000. Prerequisite courses are charged separately, based on the specific course plan for each student.

If payment is in Israeli shekels, the value in shekels will be determined according to the exchange rate on the day that payment is received.

Reichman University reserves the right to change all tuition and fee rates without prior notice.

FINANCIAL AID

GRANT FOR NEW IMMIGRANTS

The Government of Israel offers financial assistance for graduate school tuition to new immigrants under the age of 30, provided they do not already have a graduate degree from abroad and that their program of choice is recognized by the Student Authority. Students must begin their graduate studies within three years of their aliyah date (not including army service), in order to be eligible for this assistance.

For more details about conditions of eligibility and the application process please visit:

https://www.gov.il/en/Departments/Units/students_authority_maya

MASA

Jewish students between the ages of 18-30 who have not previously been on a long-term program to Israel and have not made aliyah are eligible for a onetime grant from Masa towards tuition.

FOR MORE INFORMATION

https://www.runi.ac.il/en/schools/rris/

www.masaisrael.org



FREE APPLICATION FOR FEDERAL STUDENT LOANS (FAFSA)

American students are eligible for Stafford Loans as part of the Direct Loans Program. Students can register online at: https://studentaid.gov from October 1, 2023 until April 1, 2024. Our school code is G40703.

Please email <u>rina@afidc.org</u> once you receive your Student Aid Report (SAR).

For further information: www.runi.ac.il/fafsa



Networking is the name of the game!
To date, there are more than 35,000 Reichman University graduates from more than 90 countries. This gives students a unique opportunity to meet people from different backgrounds and learn about other nations and cultures, and to establish friendships that last a lifetime. It also creates a worldwide networking system that gives our students an advantage throughout their lives.

Our small classes create an intimate atmosphere, which allows students to get to know each other and the staff. Our philosophy is that our students are our partners.

Reichman University is one of the most prestigious universities in Israel. Employers seek Reichman University graduates because they come with practical tools and hit the ground running. Reichman University operates a Career Development Center that aims to prepare students and alumni for the job market, and to provide them with the tools to find suitable employment both before and after they graduate.

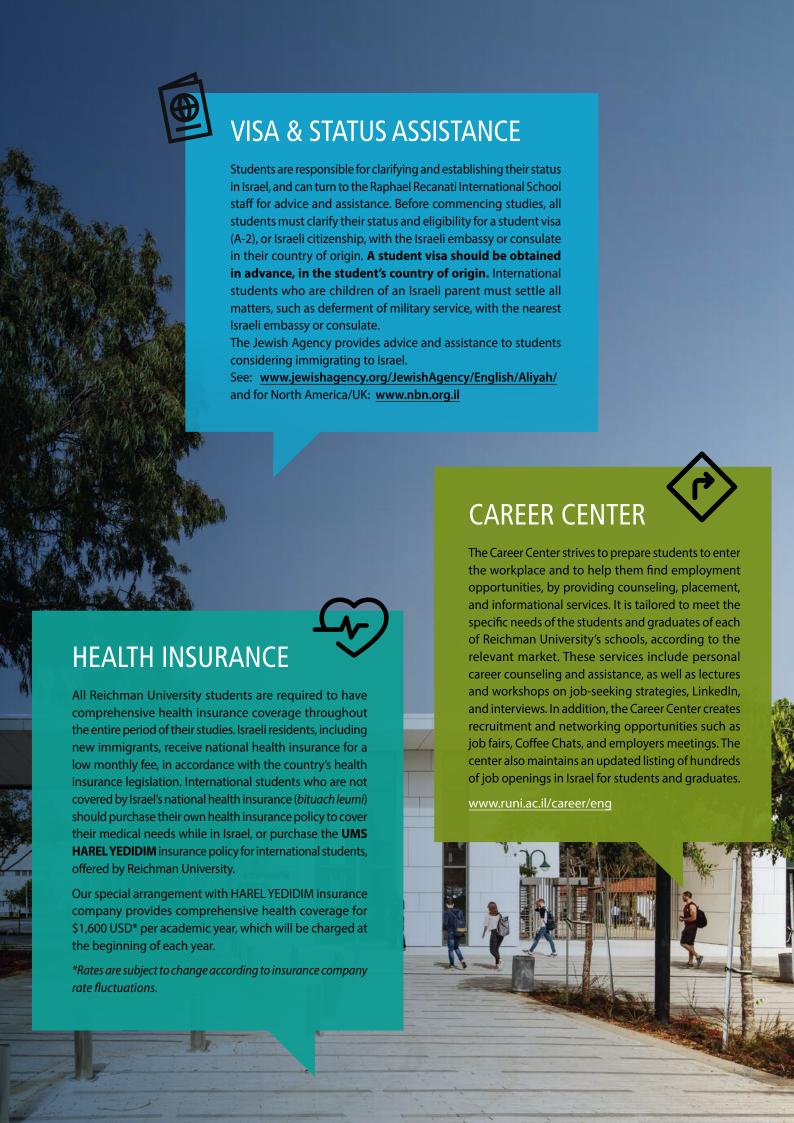
Reichman University offers a large array of extracurricular activities: sports, debate club, Model UN, Israel advocacy, JLIC-RRIS Friday night dinners, shiurim, mincha club, choir, band, and much more.

WHY REICHMAN UNIVERSITY

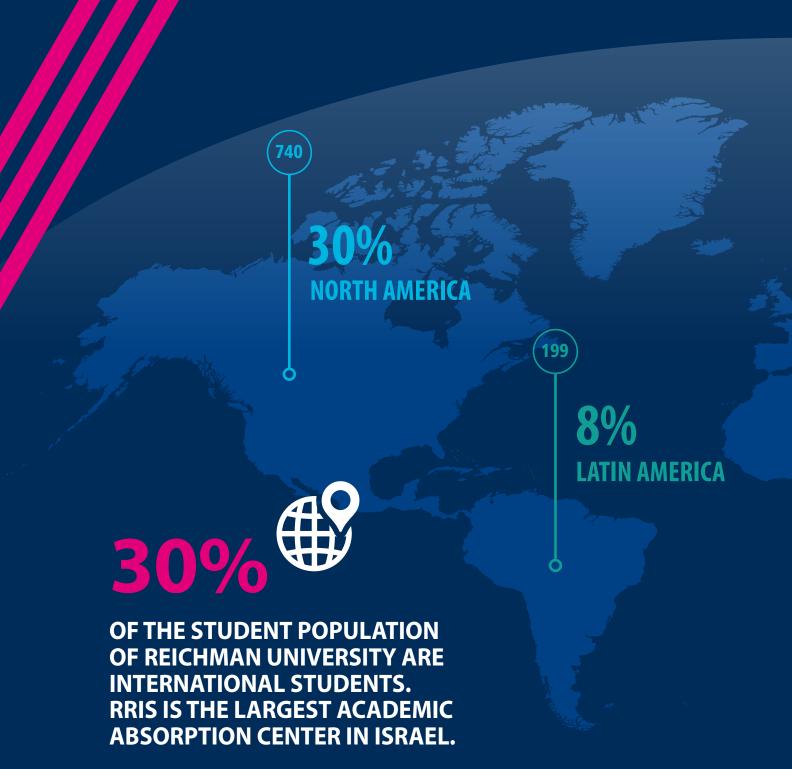
The Raphael Recanati International School provides very special care for its students. We are the largest academic absorption center in the country. We are especially proud that we are home to more than 300 lone soldiers, who are currently studying here.

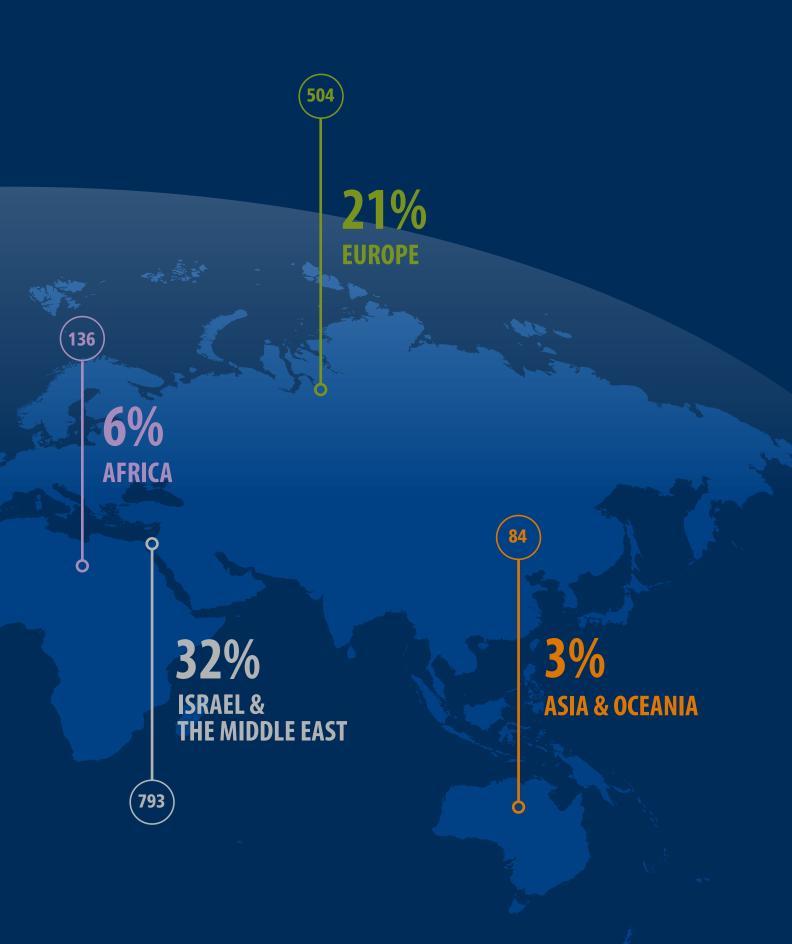
Reichman University was ranked number one in student satisfaction for quality teaching for four consecutive years, in a nationwide survey conducted by Israel's Council for Higher Education. We are the first non-government-subsidized academic institution to grant doctoral degrees.

One-third of Reichman University students are international, making us the most international university in Israel for full-degree students. Israeli students serve as counselors for first-year students in order to help them find their way around and get to know the system.



RRIS GLOBAL VILLAGE





ACADEMIC CALENDAR 2023-2024 ה'תשפ"ד

Orientation week	Oct. 15-20, 2023
Fall semester begins	Oct. 22, 2023
Memorial Day for Yitzchak Rabin z"l	Oct. 26, 2023
Hanukkah vacation	Dec. 10, 2023
Fall semester ends	Jan. 19, 2024
Fall exams begin	Jan. 21, 2024
Spring semester begins	March 10, 2024
Purim vacation	March 24, 2024
Passover vacation	April 17-30, 2024
Studies resume	May 1, 2024
Eve of Holocaust Memorial Day	May 5, 2024
Holocaust Memorial Day ceremony	May 6, 2024
Eve of Israel Memorial Day / Memorial Day ceremony	May 12, 2024
Israel Memorial Day	May 13, 2024
Israel Independence Day	May 14, 2024
Memorial Day ceremony for Ethiopian Jews who perished on their way to Israel	June 5, 2024
Shavuot vacation	June 11-12, 2024
Graduation ceremony (class of 2022)	TBD
Honorary Fellowship & Outstanding Researchers and Lecturers ceremony	TBD
Student Day	TBD
Spring semester ends	June 21, 2024
Spring exams begin	June 23, 2024
Summer semester begins	July 21, 2024
Logistics weekend	TBD
Summer semester ends	Sept. 13, 2024
Summer exams begin	Sept. 15, 2024







www.rris.runi.ac.il

Submit your application online https://forms.runi.ac.il/#/Public/Registration?lang=en&form=MA