Aalto University
—

Shaping a sustainable future.

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Aalto-yliopisto
Aalto-universitetet
Aalto University

Merger of three leading Finnish universities – bringing science, technology, art and business together to produce innovations

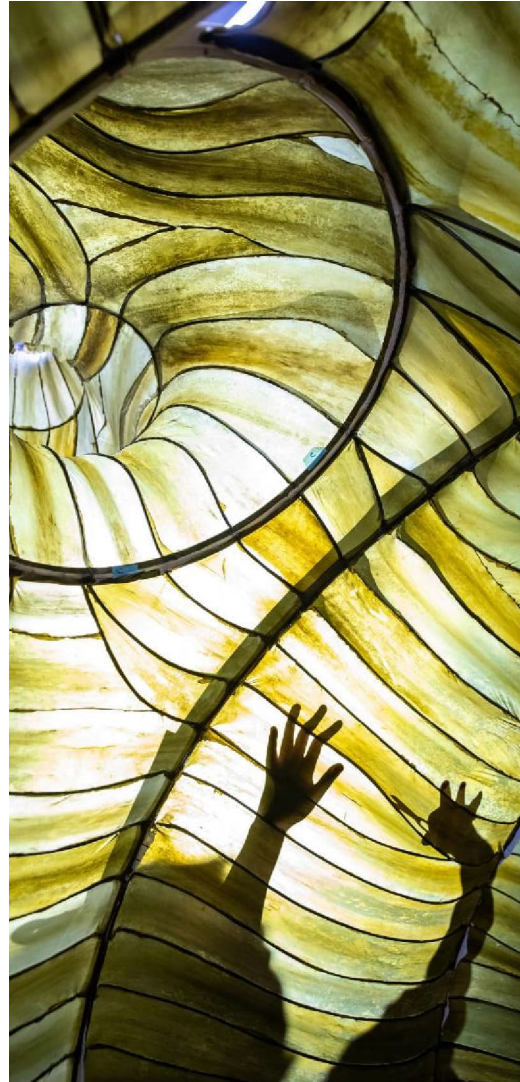| 1849 | Helsinki University of Technology |
| 1871 | University of Art and Design Helsinki |
| 1911 | Helsinki School of Economics |

Aalto University 2010

A!

Six dynamic schools

School of Arts, Design and Architecture architecture, art and media, design, film

School of Business
accounting and business law, economics, finance, information and service management, management studies, marketing

School of Chemical Engineering
bioproducts and biosystems, chemical and metallurgical engineering, chemistry and materials science

School of Electrical Engineering
electrical engineering and automation, electronics and nanoengineering, information and communications engineering

School of Engineering built environment, civil engineering, mechanical engineering

School of Science applied physics, computer science, industrial engineering and management, mathematics and systems analysis, neuroscience and biomedical engineering

A!

Our community in numbers

13 900 degree students
(full-time equivalent)

Over **100 000** alumni

A staff of nearly
4 900 of which over
413 are professors.

A!

Each year our students complete about

210 doctoral degrees,

2 000 master's degrees,

1 500 bachelor's degrees and

300 MBA and Executive MBA certificates

High quality research and education with impact

#1
in Finland
(QS World University Rankings 2024)

#113
globally
(QS World University Rankings 2024)

#21
in university-industry collaboration globally
(Leiden Ranking Industry Collaboration 2023)

#47
most international university in the world
(THE Most International Universities Ranking 2023)

A!

Excellence in art, design and architecture

Art & design ranked

#8

in the world
(QS World University
Rankings 2024)

**Architecture and
built environment
ranked**

#39

in the world
(QS World University
Rankings 2024)

A!

Students have excelled in the annual Designers' Nest/Alpha competition for 11 consecutive years.

Students have reached the final of Hyères Fashion Festival 12 years in a row.

Excellence in all key research areas

Human-centred living environments

QS: Architecture & built environments 39 (2023: 48)
ShanghaiRanking:
Marine/Ocean engineering 19 (2022: 21)
Civil engineering 101-150 (2022: 201-300)

Health and wellbeing
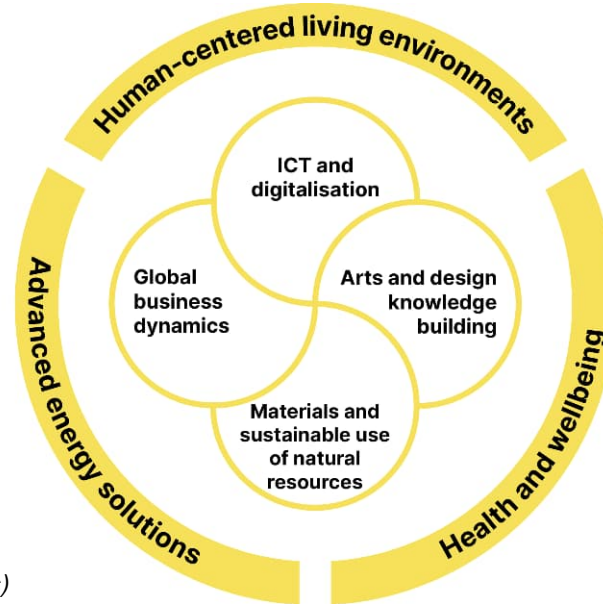
European EngiRank:
Medical engineering 7 (2022: n/a

Advanced energy solutions

ShanghaiRanking:
Electrical & electronic engineering 76-100 (2022: 76-100)
QS: Electrical & electronic engineering 134 (2023: 104)

EngiRank (European Ranking of Engineering Programs) evaluates universities in the EU. All the other rankings compare universities globally.

ICT and digitalisation

ShanghaiRanking:
Telecommunication engineering 51-75 (2022: 51-75)
QS: Computer science & information systems 99 (2023: 84)
Data science & AI 41 (new)
THE: Computer science 86 (2022: 73)

Arts and design knowledge building

QS: Art & design 8 (2023: 6)

Materials and sustainable use of natural resources

QS: Materials sciences 101-150 (2023: 80)
ShanghaiRanking: Textile science and engineering 41 (new)

Global business dynamics

THE: Business and economics 84 (2022: 86)
QS: Business and management studies 99 (2023: 76)
Marketing 21-50 (new)

A!

Attractive academic career system

We are on the lookout for people who want to change the world.

Our tenure track system for professors is an internationally recognized academic career system with clear steps, in which more junior researchers can also compete.

389 tenure track recruitments since 2010

80% of tenure track applications have come from outside Finland

A!

A community where everyone feels included

Equality, diversity and inclusiveness are in the core of our culture, supporting our community's wellbeing, creativity and ability to foster world-class research, teaching and impact.

We actively work toward providing an inclusive and accessible environment and support wellbeing and professional growth of students and employees.

A!

Campus – home of Aalto community

Our vibrant and well-connected campus, less than a 15-minute metro ride from the Helsinki city centre, enables inspiring, engaging and secure learning spaces and creative infrastructure solutions.

Accessibility and carbon neutrality are at the core of our campus vision.

A lively university campus in Otaniemi, Espoo, houses schools, housing, kindergartens, startups, research institutes, offices and two shopping centres, and attracts students, personnel and partners worldwide.

A!

Developing campus

2018–2019

School of Arts, Design and Architecture and School of Business moved to Otaniemi. Väre building, shopping centre A Bloc, School of Business building and startup hub A Grid opened. Navigation functionality added to Aalto Space mobile application.

2020–2021

Aalto University Töölö and shopping centre A Blanc renovation completed. Campus outdoor area improvement began. Agreement made on building Student Centre, a building to be owned and housed by students. Espoo's first low heating network structure completed. Virtual campus tour launched.

2022

Construction of Otakaari 2 and renovation of Otakaari 5L begin, bringing more space for learning, research and events, and a studio centre. Campus outfoor area improvement continues. Several outdoor art pieces put up. A space for creativity, Space 21 opens.

2023–2025

Aalto Works block's phases K3 and R4, Otakaari 2 & 5L and Student Centre completed. New residential buildings and services in the area. New buildings in the low heating network.

2026–2035

Developing Chemist's, Biologist's, Marine Technology and Kivimies blocks. New office and residential buildings and services in the area. Carbon neutral campus 2030.

A unique collaboration hub

Meilahti
Health
Campus
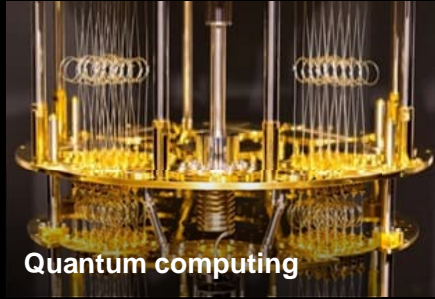
University of
Helsinki

Maria 01
Startups

Ruoholahti
Business
District

Aalto
University

Keilaniemi
Business Park

Collaboration hub

Aalto-yliopisto
Aalto-universitetet
Aalto University

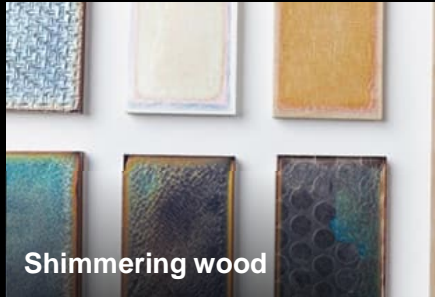# Home of creativity, exploration and innovation

Quantum computing

Alusta pavilion

Design Factory platform for challenge-driven education

Every year, Aalto community produces innovations and designs prototypes that could improve our lives in the future.

Shimmering wood

Flower leather

Lignin coatings

Meliora game to treat depression

A!

Advancing entrepreneurship

We weave entrepreneurial mindset into the fabric of Aalto University's culture and operations.

We want to inspire our students to think and learn like an entrepreneur by integrating entrepreneurial courses into all fields of study.

We provide spaces, funding and support for student-driven activities.

50%
of Finnish startups founded
in universities come from
the Aalto community

100%
of bachelor's degree students
learn entrepreneurial capabilities
as natural part of their studies

100
companies founded every
year in our ecosystem

A!

Vibrant entrepreneurial community

AALTO VENTURES PROGRAM

A! Aalto University Innovation Services

A! Aalto University Startup Center

G R A D

Aaltoes

DASH

IGNITE

JUNCTION

KIUAS

SLUSH

startuplifers

A!

Low-hierarchy culture with empowered students: driving force behind the entrepreneurial ecosystem.

Slush, one of the world's most significant startup events, and Europe's leading hackathon Junction have been born in Aalto's student community.

From ideas to impact

Good ideas turn into great business in Aalto's multiple incubators and accelerators.

Aalto University Innovation Services and Aalto Startup Center form a path to entrepreneurship for Aalto-based research innovations.

Many of the most promising, innovative startups in Finland originate from our ecosystem.*

*) in 2022, 4 out of 5 most funded Finnish startups originated from the Aalto ecosystem

Students from all over the world

Share of international students:

9%
bachelor's degree students

30%
master's degree students

42%
doctoral degree students

Aalto University's degree students represent approx. 120 nationalities.

A!

Education at all levels

Bachelor's (180 ECTS, 3 years)

- Bachelor of Arts in Design, Bachelor of Science in Economics and Business Administration,
- Bachelor of Science in Technology

Master's ~ 100 programmes (all but one taught in English)

- Master of Arts, Master of Science in Economics and Business Administration,
  Master of Science in Architecture, Master of Science in Landscape Architecture,
  Master of Science in Technology

- Master's studies 120 ECTS (2 years)

PhD

- Postgraduate degrees: Licentiate's degree and Doctoral degrees

A! Aalto University

Professors

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Professors	293	329	369	388	386	386	389	390	393	395
International	12%	15%	17%	18%	20%	22%	24%	24%	26%	27%
Women	13%	16%	17%	20%	19%	20%	20%	21%	20%	22%

School of Science

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October 2024

A"
Aalto University
School of Science

School of Science

4656
Degree students of which 765 doctoral students 2023

412
Master of Science degrees 2023

341
Bachelor of Science degrees 2023

70
Doctor of Science degrees 2023

103
Professors

~ €40M
External funding

Departments

Applied Physics

Computer Science

Industrial Engineering and Management

Mathematics and Systems Analysis

Neuroscience and Biomedical Engineering

Research focus

- **Computer and computational science**

- **Condensed matter and materials physics**

- **Creation and transformation of technology-based business**

- **Neuroscience and health technology**

- **Advanced energy solutions**

In addition, we focus on the following areas together with other Aalto schools: cybersecurity, digital health, materials science, medical technology, quantum technology, and technology entrepreneurship

A? Aalto University
School of Science

Bachelor's Programmes

Bachelor's Programme in Science and Technology (in Finnish):

- Computer Science
- Engineering Physics and Mathematics
- Information Networks
- Industrial Engineering and Management
- Engineering Psychology (SCI + ELEC)

Aalto Bachelor's Programme in Science and Technology (in English):

- Data Science (SCI)
- Quantum Technology (SCI + ELEC)
- Computer Engineering (ELEC)
- Digital Systems and Design (ELEC)
- Chemical Engineering (CHEM)
- Computational Engineering (ENG)

Master's Programmes

Industrial Engineering and Management (SCI)

- Operations Management
- Organisation Design and Leadership
- Product and Innovation Management
- Strategy

Information Networks (SCI)

- Digital Ethics, Society and Policy
- Software Engineering and Architectures
- Strategy and Organisational Design
- User, Data and Design

Mathematics and Operations Research (SCI)

- Applied Mathematics
- Mathematics
- Systems and Operations Research

Engineering Physics (SCI)

- Advanced Energy Technologies
- Materials Physics and Quantum Technology

Life Science Technologies (SCI, ELEC, CHEM)

- Bioinformatics and Digital Health (SCI)
- Biomedical Engineering (SCI)
- Biosensing and Bioelectronics (ELEC)
- Biosystems and Biomaterials Engineering (CHEM)
- Complex Systems (SCI)
- Human Neuroscience and Technology (SCI)

Computer, Communications and Information Sciences (SCI, ELEC, ARTS)

- Acoustic and Audio Technology (ELEC+SCI)
- Communications Engineering (ELEC)
- Computer Science (SCI)
- Game Design and Development (SCI + ARTS)
- Human-Computer Interaction (SCI+ELEC)
- Machine Learning, Data Science and Artificial Intelligence (SCI)
- Signal Processing and Data Science (ELEC)
- Software and Service Engineering (SCI)
- Speech and Language Technology (ELEC)

International Design Business Management
(Joint between all schools of Aalto University)

International joint programmes/ Double Degree Programmes

SECCLO - Security and Cloud Computing (SCI)

- Aalto major: Security and Cloud Computing

Partner university specializations:

- Communications Systems (KTH, Sweden)
- Information Security (NTNU, Norway)
- Reliable Distributed Systems (DTU, Denmark)
- Cryptography (UT, Estonia)
- Big Data Security (EURECOM, France)

ICT Innovation – EIT Digital Master School (SCI + ELEC)

- Autonomous Systems and Intelligent Robots (ELEC)
- Cloud and Network Infrastructures (ELEC)
- Data Science (SCI)
- Human-Computer Interaction and Design (SCI)

Computer, Communications and Information Sciences (SCI)

- Computer Science: bilateral partner agreement with Grenoble INP, France

- Machine Learning, Data Science and Artificial Intelligence (Macadamia): bilateral partner agreement with Grenoble INP, France, and EURECOM, France
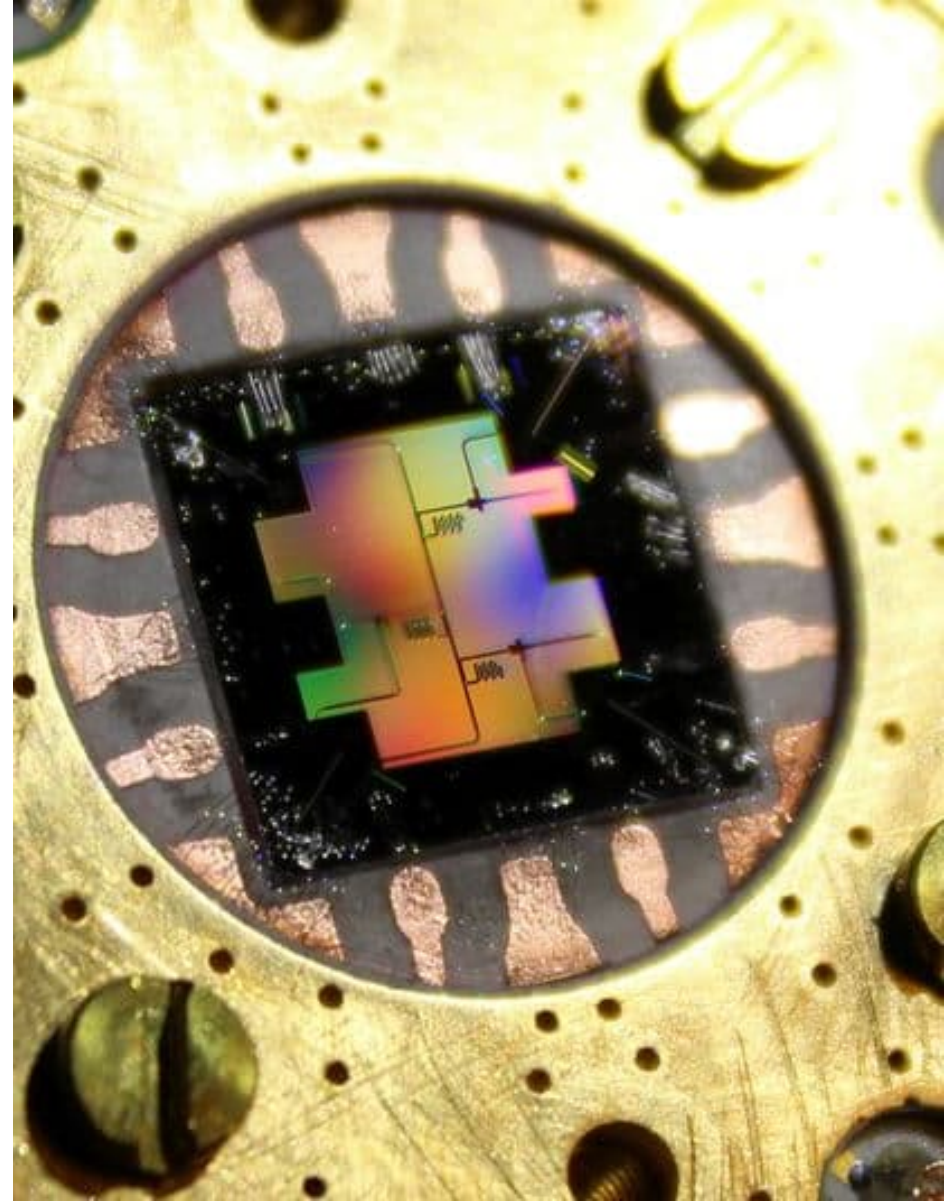
Mathematics and Operations Research (SCI)

- Applied Mathematics: bilateral partner agreement with Grenoble INP, France
- Systems and Operations Research: bilateral partner agreement with Grenoble INP, France

Doctoral Programme in Science

- **The largest of the doctoral programmes at Aalto**
  - 80-100 new doctoral candidates / year (2021: 109)
  - 70-80 doctoral graduates / year (2021: 51)
- **The research work is done in the five departments under the following research fields:**
  1. Engineering Physics (PHYS)
  2. Computer Science (CS)
  3. Neuroscience and Biomedical Engineering (NBE)
  4. Mathematics and Systems Analysis (MS)
     - *Research fields: Mathematics and Statistics, Systems and Operations Research*
  5. Industrial Engineering and Management (DIEM)

Strategic centres and initiatives

- **Aalto Brain Centre (ABC)**
- **Aalto Science Institute (AScI)**
- **Aalto Ventures Program (AVP)**
- **Biodesign Finland**
- **Finnish Center for Artificial Intelligence (FCAI)**
- **Helsinki-Aalto Institute for Cybersecurity (HAIC)**
- **Helsinki Institute for Information Technology (HIIT)**
- **Institute Q**

Aalto Science Institute (AScI) International Summer Research Programme

The programme offers **bachelor's and master's students employment opportunities to participate first-hand in topical research**, to interact with the premier research groups at Aalto University, and to network in an international environment.

In support of AScI's role in internationalisation, **the positions are open to students from all countries.** Cultural and social activities enrich this unique summer experience in Finland.

- Topics: 60 projects in 12 departments across the schools of science and engineering
- Dates: 3 months June – August (some flexibility)
- Full salary (≈ 2K/month): more than covers living expenses
- 2024: 4300 applications, 68 hired interns from 25 countries.

https://www.aalto.fi/en/aalto-science-institute-asci/

A? **Aalto University
School of Science**

Helsinki-Aalto Institute for Cybersecurity

(HAIC)

https://haic.fi/

SCI's strategic initiative to attract top students and ensure excellence in information security research and education

Best expertise in Finland, one of the top in Europe

Company donated HAIC scholarships for top students

Popular security MSc programmes

Pioneer in industrial interaction for students during studies

Active community of information security specialists and students

Public outreach with HAIC talks from leading experts and Secure Systems Demo Days

Contact: Prof. Tuomas Aura, Director of HAIC, tuomas.aura@aalto.fi

Aalto Ventures Program advances entrepreneurial mindset and capabilities with all Aalto students

- AVP promotes **sustainability through entrepreneurship** by focusing on solving problems related to UN's Sustainable Development Goals. Entrepreneurship is one of the key drivers of innovation, which is why we teach our students to build like an entrepreneur — whether they end up founding a company or not.

- AVP makes **entrepreneurship education** available to all Aalto students by providing easy-to-access startup courses, and by integrating entrepreneurship content to degree programs.

- AVP **helps researchers and scientists** take their research into the real world by providing them with new tools and boosting their entrepreneurial attitude.

- AVP supports initiatives and activities by **student-driven entrepreneurial ecosystem** by developing agile processes to work with the student ecosystem as a team.

A? **Aalto University School of Science**

Aalto University
School of Engineering

**Aalto University
School of Engineering**

Kari Tammi
Dean

Jani Romanoff
Vice Dean for Education

Seppo Junnila
Vice Dean for Research

Antti Peltokorpi
Vice Dean for Impact

**Department of
Built Environment**

Geoinformatics

Spatial Planning and
Transportation Engineering

Real Estate Economics

Water and Environmental
Engineering

*Institute of Measuring and
Modelling for the Built
Environment*

Raine Mäntysalo
Head of Department

**Department of
Civil Engineering**

Mineral Based Materials
and Mechanics

Performance in Building
Design and Construction

Structures – Structural
Engineering, Mechanics
and Computation

Heidi Salonen
Head of Department

**Department of
Mechanical Engineering**

Energy Conversion and
Systems

Marine and Arctic
Technology

Materials to Products

Mechatronics

Design Factory

Pedro Vilaça
Head of Department

Bachelor's degree education (BSc, Tech.)

Bachelor's Degree Programme in Engineering (Finnish/Swedish), majors:

Civil Engineering
Energy and Mechanical Engineering
Sustainable Communities
Real Estate Economics and Geoinformatics

Aalto Bachelor's Programme in Science and Technology (English)

Master's programmes (MSc, Tech.)

Advanced Energy Solutions *(joint programme within Aalto University)*
Building Technology
Geoengineering
Geoinformatics
Mechanical Engineering
Real Estate Economics
Spatial Planning and Transportation Engineering
Water and Environmental Engineering

Doctoral Programme in Engineering (DSc, Tech.)

Eight fields of research aligned with departments' research groups.

**Aalto University
School of Engineering**

**International Joint Master's Programmes
(two-years, 120 ECTS)**

**European Institute of Innovation and Technology (EIT)
Programmes**

- **Environomical Pathways for Sustainable Energy Systems**

- **Energy Storage**

- **Manufacturing**

- **Urban Mobility**

Nordic Master Programmes

- **Cold Climate Engineering**

- **Environmental Engineering**

- **Innovative and Sustainable Energy Engineering**

- **Maritime Engineering**

**Other European Cooperation
Master's Programmes**

- **European Mining Course**

**Aalto University
School of Electrical
Engineering**

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Electrifying the future
Aalto University School of Electrical Engineering

Aalto University
School of Electrical Engineering - Departments and Units

Jussi Ryynänen
Dean

Vesa Välimäki
Vice Dean for Research

Anouar Belahcen
Vice Dean for Teaching

Petri Mähönen
Vice Dean for Impact

Department of Electronics and Nanoengineering

- Photonics and Nanotechnology
- Microwave and Integrated Circuit Design
- Space Science and Technology
- Electromagnetics

Ville Viikari
Head of Department

Department of Electrical Engineering and Automation

- Power Systems and Energy Conversion
- Control, Robotics and Autonomous Systems
- Health Technology

Jorma Kyyrä
Head of Department

Department of Information and Communications Engineering

- Human-centric Technology
- Communications and Networked Systems
- Fundamentals of Information and Communication Engineering

Tapio Lokki
Head of Department

Metsähovi Radio Observatory

- Active Galaxies
- Solar Research
- Very Long Baseline Interferometry (VLBI)

Joni Tammi
Head of Department

A!

Aalto University in international rankings

101–125

in Engineering
Times Higher Education (2023)

19th

In Telecommunications Engineering

ShanghaiRanking Global Ranking of Academic Subjects (2023)

104th

In Electrical and Electronic Engineering

QS World University rankings (2023)

7th

In Medical engineering

EngiRank Europe (2023)

128

In Electrical Engineering

NTU Advanced energy solutions World ranking (2023)

101–150

In Computer Science and Engineering

Shanghai Ranking Global Ranking of Academic Subjects (2023)

A!

Bachelor's level studies

In Finnish and in Swedish

Automaatio ja robotiikka

Bioinformaatioteknologia

Informaatioteknologia

Elektroniikka ja sähköfysiikka

Sähköenergiatekniikka

In English

Digital Systems and Design

Quantum Technology

Computer Engineering

A!

Master's degree programmes

- Electronics and Nanotechnology
- Automation and Electrical Engineering
- Communications Engineering
- Acoustics and Audio Technology
- Signal Processing and Data Science
- Speech and Language Technology
- Hydrogen and Electric Systems
- Life Science Technologies
- Advanced Energy Solutions - Energy Systems and Markets
- International Design Business Management
- Health Technology Engineering

A!

Double degree programmes

- Autonomous Systems and Intelligent Robots
- Cloud and Network Infrastructures
- Space Science and Technology
- Smart Systems Integrated Solutions
- Communications and Data Science

A!

School of Chemical Engineering –

Catalyst of change

Bachelor's and master's programmes

- **Aalto Bachelor's Programme in Science and Technology –** Chemical Engineering

- **Master's Programme in Bioproducts Engineering**

- **Master's Programme in Biotechnology**

- **Master's Programme in Chemical and Metallurgical Engineering**

  - Chemical and Process Engineering

  - Sustainable Metallurgical Engineering

- **Master's Programme in Chemistry and Materials Science**

Other study options (Aalto joint programmes)

- **Master's Programme in Life Science Technologies**
  - Major: Biosystems and Biomaterials Engineering

  Joint programme with SCI and ELEC

- **Master's Programme in Advanced Energy Solutions**
  - Major: Industrial Energy Processes

  Joint programme with ENG and ELEC

- **Master's Programme in International Design Business Management**

  Joint programme with all Aalto schools

- **Master's Programme in Creative Sustainability**

  Joint programme with BIZ and ARTS

Other study options (international joint programmes)

- **Master's Programme in Biological and Chemical Engineering for a Sustainable Bioeconomy (Bioceb)**
  European partner universities

- **European Mining Course**
  Joint Programme with ENG + European partner universities

Please note that the international joint programmes have their own admissions schedules!

Take a virtual campus tour

https://virtualtour.aalto.fi/

Finland in rankings

#1 **Happiest country in the world (UN, 2019, 2020, 2021, 2022)**

#1 **Press Freedom Index (Reporters Sans Frontieres, 2016)**

#1 **Greenest country in the world (Environmental Performance Index by Yale University, 2016)**

#3 **Corruption Perception Index (Transparency International, 2016)**

#3 **Best quality of life (World Economic Forum, 2016)**

#8 **Global competitiveness (World Economic Forum, 2015-2016)**

#1 **Most stable country in the world (The Fragile States Index by the Fund for Peace, 2015)**

#1 **Best chances of equal treatment at work for women (Glassceiling index by The Economist, 2015)**

#3 **Global Gender Gap (World Economic Forum, 2015)**

#6 **Country RepTrack reputation (Reputation Institute, 2015)**

#2 **Global Cleantech Innovation Index (WWF, 2014)**

A! **Aalto University**