LAND OF THE CURIOUS
Clean energy, water and air are life-giving resources for which we at LUT University seek new solutions with our expertise in technology and business.

We help society and businesses in their sustainable renewal. Our international community consists of 6500 members. Our campuses are in Lappeenranta and Lahti, Finland.
We have the **courage** to succeed, **passion** for innovation through science and a **will** to build well-being.

**LUT UNIVERSITY STRATEGY 2030**

**TRAILBLAZERS**

Science with a Purpose
SYSTEM
EARTH

AIR
Turning emissions into opportunities

BUSINESS
Sustainable renewal of business and industry

WATER
Refining sidestreams into value

ENERGY
Transition to a carbon-neutral world

LUT UNIVERSITY STRATEGY 2030 • TRAILBLAZERS – Science with a Purpose
SCIENTIFIC SOLUTIONS

ENERGY
TRANSITION TO A CARBON-NEUTRAL WORLD
- Electrification with power-to-x technologies
- High-speed drives and turbines
- Energy market change and industrial impacts

AIR
TURNING EMISSIONS INTO OPPORTUNITIES
- Defining air quality, emissions and climate impact
- New technology to turn emissions into products

BUSINESS
SUSTAINABLE RENEWAL OF BUSINESS AND INDUSTRY
- Driving sustainable growth
- Creating value in a digital economy
- Advanced design, manufacturing and processing

WATER
REFINING SIDESTREAMS INTO VALUE
- Resource recovery from wastewater
- Responding to complex water treatment needs

LUT UNIVERSITY STRATEGY 2030 • TRAILBLAZERS – Science with a Purpose
LUT IN FIGURES

1969  
LUT was founded in 1969 – combining technology and business from the start

5750  
Bachelor’s and Master’s students

933  
Scientific publications (2020)

400  
Doctoral students

93 M€  
Funding € 93.4 million: Ministry of Education and Culture € 49.7 million, supplementary funding € 43.7 million (2020)

1028  
Staff members

85  
Nationalities on campuses

⅓  
⅓ of first-year students are foreign nationals

www.lut.fi/en
ONE OF THE WORLD’S BEST UNIVERSITIES

확우치는 위드 유니버시티 선정 중에 가장 좋은 대학

- Among the top 400 universities
  - Times Higher Education World University Rankings 2021

- Among the World’s top 10 university for climate action
  - Times Higher Education Impact Rankings, 2021

- Among the top 414 universities
  - QS World University Rankings 2022

- Among the top 1 000
  - ARWU Academic Ranking of World Universities 2020

- LUT School of Business and Management in the top 200
  - Times Higher Education World University Rankings by subject: business and economics 2020
LUT is one of the TOP 300 UNIVERSITIES in the Impact Ranking.

The Times Higher Education Impact Rankings 2021 assess the social and economic impact of universities against the UN's Sustainable Development Goals.
The LUT community shares a certain attitude and state of mind. We do things differently. We look at things from unexpected perspectives, we question, and we search for solutions. We fight for a better world.

We are a community where curious people inspire curious people. Without curiosity, we cannot change the world.

Our campuses are located in Lappeenranta and Lahti, but our state of mind can be achieved anywhere.
LAPPEENRANTA CAMPUS

- In the district of Skinnarila by Lake Saimaa
- Students: 5 000
- Staff: 890 (12/2020)
  - Staff travels between the two campus cities
- The City of Lappeenranta won the European Green Leaf Award 2021 in a competition organised by the European Commission.
In the district of Niemi

Academic activity since 1996, independent campus as of 2019

Students: 300

Staff: 140 (12/2020)
  - Number of employees on the increase
  - Staff travels between the two campus cities

The City of Lahti received the European Green Capital Award 2021 in a competition organized by the European Commission.
SUSTAINABILITY

Our activity is steered by ecological, economic and social sustainability.
LUT is committed to the UN’s Sustainable Development Goals. Through our Trailblazer 2030 Strategy and research, we influence particularly the ones above.
SOLVES SUSTAINABILITY CHALLENGES

- Turning carbon dioxide from waste into an opportunity: producing fuels, valuable chemicals and food from air
- Energy system based on fully renewable energy sources
- Water purification techniques for the removal of pharmaceutical residues and the recovery of nutrients from wastewaters
- Fibre-based packaging to solve plastic waste issues
- World’s first personal mobility based carbon trading scheme
- Internationalisation and growth of Finnish cleantech companies
CARBON NEGATIVE LUT BY 2024

We aim to stop climate change – not merely adapt to it.
OUR WAY OF THINKING AND OPERATING

LUT GREEN CAMPUS

Taking action on campuses

- LUT produces 7% of the electricity it consumes, and the energy it purchases is 100% renewable

Sustainable practices

- online studies and exams with the Exam software reduce travel

Utilising research results

- minimising and sorting waste, responsible purchases and utilisation of leftover food

Testing your own ideas

- J. Hyneman Center (JHC) for rapid prototyping
RESEARCH

LUT is a strongly specialised science university that achieves impactful results.
LEADING THE WAY IN RESEARCH

- The international Research and Impact Assessment (RIA) in 2019 determined that LUT’s research is of a very high international standard (score 4/5)
  - Special emphasis on open science
- Most extensive academic research and education community in the field of energy
  - Unique nuclear safety expertise and LUT’s own small modular reactor
- Largest water treatment research community in Finland
- Leading research and education community in separation technology
- Important player in the digital knowledge economy
- Leading research community in international, sustainable growth entrepreneurship
RESEARCH PLATFORMS

- AMBI – Analytics-Based Management for Business and Manufacturing Industry
- GREENRENEW – Green Hydrogen and CO₂ for Industry Renewal
- INERCOM – Integrated Energy Conversion Machinery
- MORE SIM – Modelling reality through simulation
- SCI-MAT – Sustainable circularity of inorganic materials
AMBI

Analytics-Based Management for Business and Manufacturing Industry

Our research focuses on smart technologies in the manufacturing industry, digital transformation and business analytics.

With our help companies can improve their competitiveness and create sustainable value in the digital economy.
GREENRENEW

Green Hydrogen and CO$_2$ for Industry Renewal

We facilitate the transition to carbon-neutral industry based on renewable energy. We create cost-competitive solutions for key processes needed in the industry renewal.

The solutions are enabled by green hydrogen and turning CO$_2$ from a problem to a resource.
INERCOM
Integrated Energy Conversion Machinery

We support the transition to a carbon-neutral world by creating record-breaking efficient solutions for energy conversion machinery.
The MORE SIM platform addresses virtual human, machine, and environmental systems to enable new approaches to the organisation of industrial activity.

It provides digital tools that will contribute to achieving sustainable industrial growth.
We address virtual human, machine, and environmental systems to enable new approaches to the organisation of industrial activity.

We provide digital tools that will contribute to achieving sustainable industrial growth.
LUT'S PUBLICATIONS WITH PUBLICATION FORUM RATINGS 1, 2 AND 3 AND MASTER’S DEGREES

HIGH-IMPACT RESULTS

<table>
<thead>
<tr>
<th>Year</th>
<th>Publication Forum rating 1</th>
<th>Publication Forum rating 2-3</th>
<th>Master's degrees</th>
</tr>
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<tbody>
<tr>
<td>2015</td>
<td>565</td>
<td>194</td>
<td>441</td>
</tr>
<tr>
<td>2016</td>
<td>497</td>
<td>221</td>
<td>412</td>
</tr>
<tr>
<td>2017</td>
<td>510</td>
<td>248</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>563</td>
<td>343</td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td></td>
<td>441</td>
<td>412</td>
</tr>
</tbody>
</table>
PUBLICATION FORUM RATING 2-3:

PUBLICATIONS PER TEACHING AND RESEARCH STAFF MEMBER (PERSON-YEARS) 2019

HY: 0.77  LUT: 0.71  TY: 0.68  OY: 0.57  JY: 0.57  ÅA: 0.57  TAU: 0.53  SHH: 0.52  LY: 0.50  ISY: 0.50  Aalto: 0.45  VY: 0.09  TaideYO: 0.09
PUBLICATION FORUM RATING 2-3:

PUBLICATIONS PER TEACHING AND RESEARCH STAFF MEMBER (PERSON-YEARS) 2015–2019
EDUCATION

We are training a new generation of problem-solvers.
PROGRAMMES FOR STUDENTS

- 15 Bachelor’s programmes
  - Nine taught in Finnish and six in English

- 37 Master’s programmes
  - 12 taught in Finnish and 25 in English

- Doctoral studies in technology and business

- Seasonal programmes
  - LUT Summer School
  - LUT Winter School

- Exchange studies

www.lut.fi/admissions
FIELDS OF STUDY

- Business Administration
- Technology
  - Chemical Engineering
  - Computational Engineering
  - Electrical Engineering
  - Energy Technology
  - Environmental Technology
  - Industrial Engineering and Management
  - Mechanical Engineering
  - Software Engineering
LEADING THE WAY IN EDUCATION

- Degree programmes that meet international quality standards
  - All of our degree programmes are internationally accredited (ASIIN, EUR-ACE, EFMD)
- Two online Master’s programmes enable continuous learning for those in full-time work
- Agreement in 2019 on extensive education collaboration with HEBEI University of Technology, China
- LUT's Massive Open Online Courses (MOOCs)
  - LUT University offers online climate action courses free of charge. Each course is 2 ECTS credits.
- LUT Junior University introduces children and youths to the world of science
  - International Sustainable Campus Network (ISCN) Partnership for Progress Award 2020
STUDENT SATISFACTION

- Most satisfied technology graduates in Finland
- The LUT School of Business and Management has the best study atmosphere in Finland
- Bachelor’s graduates rate the quality of studies above the national average
- Graduates’ sustainable development skills and ethics higher than average
IMPACT

We help businesses and society in their sustainable renewal.
A UNIVERSITY THAT EMBRACES BUSINESS

- Research collaboration and innovations
  - Commercialisation of research
  - Research projects
  - Commissioned research
  - Laboratory and measurement services

- Continuous learning
  - Continuing professional development
  - Commissioned training
  - Open university instruction and Master’s programmes alongside work

- Recruitment services
  - Recruitment partnerships
  - Recruitment and employer events
  - Final thesis projects and study assignments
SOUGHT-AFTER RESEARCH PARTNER

External research funding / teaching and research staff member (person-years) 2017–2019, average (€)
GREEN CAMPUS OPEN

- Green Campus Open (GCO) promotes the commercialisation of LUT’s research
- Furthers the utilisation of LUT’s scientific research results by societal actors
- Oversees LUT’s IPR (intellectual property rights) patent portfolio and patent sales
- 73 patents at the end of 2020; 35% growth from the previous year
  - Offers investment companies insights into the university’s startups and business ideas
- Green Campus Innovations is the investment company of LUT and its partners and invests in early-stage cleantech businesses
THE SWITCH
A Yaskawa Company

- Manufactures wind power generators
- Based on LUT’s high-speed technology research
  - LUT’s spin-off Rotatek merged with two other companies
- Expanded into marine technology
- As of 2014 part of the Japanese Yaskawa Electric Corporation
  - Significant R&D investments in Finland
  - LUT’s most extensive commissioned study in 2018
- New testing facility in Lappeenranta in 2020
ENDEV
First investment target of LUT's investment company in 2012

PAKU –
AN AFFORDABLE, COMPACT AND SUSTAINABLE SOLUTION FOR SLUDGE HANDLING

Provides water purification and industrial sludge treatment solutions

Technology based on LUT’s expertise
- biomass drying and combustion technologies studied at LUT for 30 years

Innovative solution PAKU for the economically and ecologically sustainable treatment of sludge
- recovers energy and nutrients from sludge
- helps to remove phosphorus, pharmaceutical substances and microplastics from household sewage
- the remaining ash can be used as fertilizer

Test facilities in Kotka and Pyhtää, and the world’s first industrial scale pilot plant in Rovaniemi
MEVEA

Real-time simulation and virtual design

- Manufactures simulation tools and software for e.g. the mining and shipping industries and education institutions
- LUT’s spinoff founded by a mechatronics and virtual design research group at the Department of Mechanical Engineering
- Shipyard workers simulate loading and unloading cargo containers to and from vessels
- Continuous research collaboration with LUT
  - E.g. digital twin project to determine optimal modelling solutions
At Danfoss, we are engineering solutions that allow the world to use resources in smarter ways. Driving the sustainable transformation of tomorrow.

Specialised in sophisticated electric drivetrain systems

Originally an LUT spin-off called Visedo
  - Visedo was based on LUT’s strong energy research

Visedo was sold to the Danish company Danfoss in 2017 and became Danfoss Editron

A unique permanent magnet technology enables hybrid and electric applications for marine, off-highway and commercial transport
  - The aim is to produce power with less fuel and emissions
Introducing Solar Foods’ spellbinding invention Solein – the purest protein in the world.

**Solein® Pure Protein Magic**

- Produces a new type of protein with air and solar electricity – without agriculture and the use of arable land
  - Main raw materials: carbon dioxide and green hydrogen produced with electricity from renewable sources
  - The end product can replace meat and provide a growth medium for meat substitutes
- Founded in 2017 on the basis of LUT’s and VTT’s joint projects Neo-Carbon Energy and Neo-Carbon Food.
  - Green hydrogen production and the energy revolution are at the core of LUT’s expertise.
- Collaborates with the European Space Agency (ESA) in developing a novel food production concept for Mars.
- Singled out as one of Finland’s most promising startups in 2020.
LUT GROUP

2 MISSIONS | 2 CAMPUSES | 2 ORGANISATIONS

**Strongly Specialised International Science University**
- Internationally competitive research groups
- Corporate collaboration brings relevance to research
- Strong international Master’s and doctoral programmes

**Research Focus**
- Energy
- Air
- Water
- Responsible business

**Win-Win Collaboration in Projects and Education**

**Higher Education Institution Focusing on Business, Industries and the World of Work**
- Bachelor’s degrees driven by the requirements of the working world
- National focus areas in education
- Innovation serving regional needs

**Strengths in Education and RDI**
- Circular economy
- Design
- Commercialisation of innovations
- Health care service innovations

**We Are Stronger Together on the Green Campuses**
- **Education:** digital cooperation, language training, continuing education, guidance on education paths
- **Internationality:** joint marketing of international programmes subject to a fee in India, China, Russia and Vietnam
- **Impact:** Green Campus Open, student entrepreneurship, corporate collaboration
- **Shared University Services, Facilities and Systems**