Science with Arctic Attitude

University of Oulu
3 June 2020
Science with Arctic Attitude

University of Oulu
3 June 2020
University of Oulu founded

1958

Multidisciplinary research and education

Natural Sciences and Mathematics
Biosciences
Medicine and Health
Economics and Business Administration

Engineering and Architecture
Information and Communication Technologies
Education
Humanities

60 000+

Alumni

13 000

Students

3 000

Staff
Key figures

International rankings
- 251–600

Top 3% of the world’s universities

Funding total in 2019 M€
- 230

Research based spin-off companies since 2000
- 69

Invention disclosures in 2019
- 63

Scientific publications in 2019
- 2,829

Bachelor’s degrees in 2019
- 1,153

Master’s degrees in 2019
- 1,502

Doctor’s degrees in 2019
- 158

Degrees in 2019
- 2,813
Performance in the major university rankings – within global top 3%

ARWU (Shanghai)
Academic Ranking of World Universities

301–400 ↑
national ranking 2–4

QS
World University Rankings

374 ↑
national ranking 5

Times Higher Education
World University Rankings

251–300 ↑
national ranking 3

CWTS Leiden ranking

512 →
national ranking 4
We are situated close to the Arctic region, humanity’s new frontier. The demanding conditions of the far north have always forced people to be inventive and resourceful, and many innovations that have changed the world have their roots here.

At the University of Oulu, we call this Science with Arctic attitude.
More sustainable, more intelligent, more humane
Our science-based expertise meets global challenges

Our strength
The University of Oulu’s special strength is bringing science and the different actors of society closer together. We want our research results and expertise to be in active use. We are pioneers in creating and understanding our digital future.
We are at the international top in our profile fields

Our scientific profile is built on a university with a wide range of specialisations.
Strategic development programmes

RESEARCH
High-level impactful research

INNOVATIONS AND ENTREPRENEURSHIP
Entrepreneurial source for research-based innovations

EDUCATION
Quality education for different parts of life

COMMUNITY
Skillful, adaptable, diverse and international community

CAMPUSES AND SUSTAINABLE DEVELOPMENT
Inspiring working and studying environment at resource-efficient, green campuses

DIGITALIZATION
High-quality online studies and user-centred digital services
STRATEGIC DEVELOPMENT PROGRAMMES

High-level impactful research

The University of Oulu aims to be among the best places in the world to do research in our profiling areas.

• Strengthening research in emerging fields and multidisciplinary activities
• Systematically monitoring and developing the quality of research
• Developing high-quality research infrastructures
• Promoting responsible research and the utilisation of open information
Quality education for different parts of life

- Developing and expanding competitive study offering
- Student-centred learning and excellent student experience
- Increasing the interaction between education and working life
- Internationalising the student experience and developing education export
- Strengthening education management and networks
- Making doctoral training more efficient
STRATEGIC DEVELOPMENT PROGRAMMES

Entrepreneurial source for research-based innovations

• Commercialising research results and expertise
• Active and expanding co-operation with businesses
• Strengthening entrepreneurial spirit and the culture of curiosity
• An internationally valued innovation partner

Support for entrepreneurship and startups in many ways:

University Innovation Centre – offers support for research-based innovations, university-company collaboration and business development.

Tellus – coworking space, community building and co-creation

Minor studies in Entrepreneurship available for all students
Skillful, renewing, diverse and international community

- We will succeed in competing for the best experts
- Efficient recruiting
- Well-being personnel and active competence development
- Quality leadership and managerial work
High-quality online studies and user-centred digital services

- Developing online studies and digital learning environments
- Community members will have high-quality, modern and user-centred digital services to support their work and studying
- The campuses’ digital platform will develop. Thousands of users make the campus an interesting research environment and development laboratory for new services
- IT architecture and information security management as cloud services and closer co-operation change our operating environment
STRATEGIC DEVELOPMENT PROGRAMMES

Inspiring working and studying environment at resource-efficient, green campuses

- We cooperate with Oulu University of Applied Sciences, research institutes, the University Hospital and companies
- Digitalisation improves services related to using facilities
- Our plan is to build a new accessible and energy-efficient Oulu city campus
The university community's values

Creating new
Taking responsibility
Succeeding together
Multidisciplinary and collaborative excellence

- Connecting disciplines
- Facilitating interaction
- Creating new projects
- Nurturing academic leadership
- Developing researcher community spirit
- Strengthening international networking
- Focus institutes enable researchers’ interaction and sharing of ideas across faculty boundaries
Versatile research equipment and environments

- ICT testing and development services
- Manufacturing and prototyping services
- Research services for metal and mining industries
- Process industry research services
- Construction research services
- Medical research services
- Research services in biochemistry and biomedicine
- Research services in the field of natural resources
- Educational and cultural services
Our research benefits people living at all latitudes, but we feel our responsibility as one of the Northern-most universities in the world.

Arctic Agenda

Research and innovation regarding e.g. sustainable utilization of natural resources, near-Earth space environment, logistics, technology, and cultures in the Arctic.

University of the Arctic is a cooperative, multidisciplinary network of over 200 universities, research institutes and other organizations concerned with education and research related to the Arctic.

Joint arctic agenda in collaboration with

Luleå University of Technology, Sweden
Umeå University, Sweden
UIT The Arctic University of Norway
University of Lapland, Finland
Innovation
Research and innovations rooted at the University of Oulu have changed the world

- 2.6 billion people around the world use daily telecom technology developed in Oulu. Several generations of mobile phone technology have been created here.

- Basic research and seminal innovations for heart rate monitors for consumers were made by our researchers.

- Novel therapeutics have been discovered and commercialized based on our biomedical research.

- The first internet chat system was built at our university.
The University fuels the Oulu region as the most progressive innovation environment in Finland

We participate actively in the Oulu Innovation Alliance, a regional strategic consortium of research and innovation. More than 60 research-based startups have been born in the University of Oulu during the last ten years. A few examples:

- **IndoorAtlas** – geomagnetic indoor positioning technology
- **Valossa Labs** – video artificial intelligence
- **KNL Networks** – connection systems utilizing high frequency terrestrial radio for e.g. shipping
- **Cerenion** – method for measuring the brain function of intensive care patients
- **Chain Antimicrobials** – antimicrobial peptide coated catheters to prevent hospital-acquired infections
- **Codenomicon** – cybersecurity solutions and automated software testing tools. Acquired by Synopsys, Inc in 2015.
- **Sensinode** – software technology for the internet of things (IoT). Acquired by ARM in 2013.
I think Oulu is the world's best place, second to none, for radio access engineering.

— Rajeev Suri, CEO, Nokia
Polar has designed the world's first wireless wearable heart rate monitor.

The company was founded in 1977 by Seppo Säynäjäkangas, an electronical engineering professor in the University of Oulu.

Polar heart rate monitors give training guidance based on ECG-accurate heart rate.

Company's products combine knowhow in sports, physiology, and electronics.

Polar employs 1200 people worldwide, has 26 subsidiaries globally, and operates in more than 80 countries.
International
Participating in international science networks is the foundation for the University's renewal and development.

<table>
<thead>
<tr>
<th>International cooperation</th>
<th>International Master's Programmes</th>
<th>Double Degree Programmes (Master's and Doctoral)</th>
<th>Erasmus network: No. of agreements</th>
<th>Erasmus network: Partner Universities</th>
<th>Bilateral cooperation agreements with universities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18</td>
<td>5</td>
<td>501</td>
<td>301</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Different nationalities in the university community</td>
<td></td>
<td>94</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>International staff</td>
<td>International students</td>
<td>616</td>
<td>1 015</td>
<td>522</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Erasmus network:
- No. of agreements: 501
- Partner Universities: 301

Bilateral cooperation agreements with universities:
- Agreements with universities: 62

International students:
- 1 015

Exchange students:
- 522
Campuses
University of Oulu
Linnanmaa campus, Oulu
Kontinkangas campus, Oulu
Sodankylä Geophysical Observatory
Oulanka Research Station, Kuusamo
Kajaani University Consortium
Kokkola University Consortium
Kerttu Saalasti Institute, Nivala

Summer University of Northern Ostrobothnia
Oulu, Kuusamo, Pyhäjärvi, Raahe, Ylivieska
Linnanmaa Campus - City of science and innovation

- 6 Faculties under the same roof
- 3 Focus Institutes, Thule Institute
- Tellus: cooperation and services

- Natural Resources Institute Finland (LUKE)
- Finnish Environment Institute (SYKE)
- VTT Technical Research Centre of Finland
- Technopolis
- Finnish Food Safety Authority (Evira)
- University leadership and services
- Student housing
- Botanical Gardens
- Teacher Training School
- New facilities of the Oulu University of Applied Sciences
- Sports hall
- Ice skating rink
- Student housing
Kontinkangas Life Science Campus

- 2 Faculties, Biocenter Oulu
- Student housing
- ICT, health and bio companies
- University Hospital
- Medical Research Center
- Tellus
- Dentopolis
- Finnish Institute of Occupational Health (TTL)
- National Institute for Health and Welfare (THL)
- Technopolis (Medipolis)
  - company facilitator
- Oulu University of Applied Sciences, Health education
- Oulu City Hospital
60 000 alumni – including

Leena Peltonen-Palotie
- 2010
2009 Finnish Science Academician
Helped to found the UCLA Department of Human Genetics

Jussi Pesonen
President and Chief Executive Officer, UPM

Kaisa Hietala
Partner, Gaia Consulting Oy
Chairman of the Board of Directors, Tracegrow Oy
Non-executive director, Kemira Oyj
Has worked as: EVP for Renewable Products at Neste

Antti Nousjoki
Founding partner ALA Architects
Architect of the Helsinki Central Library Oodi
Winner of the World's Best Public Library Award 2019

Martti Ahtisaari
Peace mediator
United Nations diplomat
Nobel Peace Prize laureate 2008
President of Finland 1994–2000

Paula Vanninen
Director of Verifin, Finnish Institute for Verification of the Chemical Weapons Convention
Member of the Scientific Advisory Board of the UN Organisation OPCW 2010–2016

Jarkko Oikarinen (WIZ)
Technical Lead Manager at Google
Inventor of the first Internet chat network, Internet Relay Chat (IRC)

Leena Bruckner-Tuderman
Full Professor and Chair, Department of Dermatology, Medical Center - University of Freiburg, Germany
Member of the German National Academy Leopoldina
Member of Berlin-Brandenburg Academy of Sciences and Humanities

Tytti Tuppurainen
Minister for European Affairs and Ownership Steering at Finnish Government
Member of the Parliament of Finland

Sakari Orava
Sports medicine surgeon, physician, orthopedist and professor
Client list includes Real Madrid, FC Barcelona, Chelsea FC and Juventus

Erja Sankari
VP, Supply Chain Engineering at Nokia

Anssi Lassila
OOPEAA Office for Peripheral Architecture
Finlandia Prize for Architecture 2015 for Puukuokka
Among winners of the American Architecture Prize 2016