Science with Arctic Attitude

University of Oulu
10/21/2017
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

Alumni 50,000+
Students 13,500
Staff 2,800
Key figures

Funding total in 2016 M€: 223
Bachelor’s degrees in 2016: 1273
Research based spin-off companies since 2000: 60+
Master’s degrees in 2016: 1445
Invention disclosures in 2016: 44
Doctor’s degrees in 2016: 196

International rankings: 251–500 in top 2% of the world’s universities
Scientific publications in 2016: 2869
Degrees in 2016: 2914
Performance in the major university rankings – within global top 2%

**ARWU (Shanghai)**
Academic Ranking of World Universities

<table>
<thead>
<tr>
<th>Rank Range</th>
<th>National Ranking</th>
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<tbody>
<tr>
<td>401-500</td>
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**Times Higher Education**
World University Rankings

<table>
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**QS World University Rankings**

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**CWTS Leiden ranking**

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**NTU National Taiwan University Ranking**

<table>
<thead>
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<th>Rank</th>
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<tr>
<td>392</td>
<td>5</td>
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**CWUR Center for World University Rankings**

<table>
<thead>
<tr>
<th>Rank</th>
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<tr>
<td>358</td>
<td>2</td>
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</table>
Performance in the major university rankings – within global top 2%

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<th>University Ranking</th>
<th>2017</th>
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<tbody>
<tr>
<td><strong>ARWU</strong> Academic Ranking of World Universities Shanghai</td>
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Pushing the boundaries of the known for a more sustainable, healthy and intelligent world

Environmental change
Scarcity of natural resources
Growing global population
Increasing human life expectancy
Rising wealth
Urbanization
Digitalization

We contribute to solving some of the greatest global challenges in our areas of strength.

Our work creates new research-based knowledge, educates future talents and sparks innovations.
Our strategy is based on five thematic, internationally significant research focus areas:

- Digital solutions in sensing and interactions
- Understanding humans in change
- Earth and near-space system and environmental change
- Creating sustainability by materials and systems
- Molecular and environmental basis for life-long health
Scientific profiling areas

- Digital solutions in sensing and interactions
- 6G wireless enabled smart society
- Ubiquitous wireless sensor systems
- Understanding humans in change
- Near-Earth space environment
- Physics for sustainable steel
- Co-evolution of humans and new technologies
- Fibrosis in chronic diseases and cancer
- Earth and near-space system and environmental change
- Creating sustainability by materials and systems
- Arctic interactions and global change
- Molecular and environmental basis for life-long health
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- Near-Earth space environment
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- 6G wireless enabled smart society
- Ubiquitous wireless sensor systems
- Co-evolution of humans and new technologies
- Fibrosis in chronic diseases and cancer
- Arctic interactions and global change
Our research benefits people living at all latitudes, but we utilize our location 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 170 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
The University of Oulu aims to be among the best places in the world to do research in our focus areas.

- Research community with high-ambition and critical mass
- Competitive research infrastructures
- Attractive employer for top academic talents
- Career paths for promising researchers
- Promotes the principles of open access research
Education
We encourage each student to achieve his/her full academic potential.

- High-level research combined with a welcoming atmosphere creates a unique environment for students to enjoy learning.
- High-quality degree programs attract engaged students.
- Excellent student experience.
- Effective doctoral training.
- International environment.
- Graduates are competent experts capable of creating successful, lifelong careers.
International
# International cooperation

Functioning in international science networks is the foundation for the University’s renewal and development.

<table>
<thead>
<tr>
<th>International Master’s Programmes</th>
<th>Erasmus network: No. of agreements</th>
</tr>
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<tbody>
<tr>
<td>18</td>
<td>525</td>
</tr>
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<table>
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<tr>
<th>Double Degree Programmes (Master’s and Doctoral)</th>
<th>Erasmus network: Partner Universities</th>
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<tbody>
<tr>
<td>20</td>
<td>302</td>
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<th>Different nationalities in the university community</th>
<th>Bilateral cooperation agreements with universities</th>
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<tbody>
<tr>
<td>90+</td>
<td>53</td>
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<table>
<thead>
<tr>
<th>International staff</th>
<th>International students</th>
<th>Exchange students</th>
</tr>
</thead>
<tbody>
<tr>
<td>466</td>
<td>859</td>
<td>476</td>
</tr>
</tbody>
</table>
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 Innovation Arena

VTT Technical Research Centre of Finland
Natural Resources Institute Finland (LUKE)
Finnish Environment Institute (SYKE)

University leadership and services

Student housing

Sports hall
Ice skating rink

Botanical Gardens
Teacher Training School

Oulu University of Applied Sciences will move into the same campus in 2020
Kontinkangas Life Science Campus

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

Our researchers have discovered a material which makes it possible to convert sunlight, heat and motion into energy simultaneously.
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.
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. Few examples:

- **IndoorAtlas** – geomagnetic indoor positioning technology
- **Valossa** – video artificial intelligence
- **KNL Networks** – connection systems utilizing high frequency terrestrial radio for e.g. shipping
- **Paras Biopharmaceuticals** – novel manufacturing process for osteoporosis medicine
- **Meoline** – real-time heavy metal analyzer for industrial discharge waters
- **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.
IndoorAtlas has invented geomagnetic hybrid indoor positioning technology.

The company was founded in 2012 by Professor Janne Haverinen and four PhDs in computer science, as a spin-off from the University of Oulu.

Company’s technology utilizes Earth’s magnetic field and its anomalies, and smartphone’s built-in magnetic sensor.

Geomagnetic positioning allows to accurately pinpoint a location inside a building.

The service enables indoor search, wayfinding and proximity marketing for greater user satisfaction.
Fostering research-based innovation and start-up culture

We drive innovation by encouraging multi-disciplinary thinking, and by fostering collaboration.

We train competent, adaptable professionals who are able to apply their knowledge and create novel solutions for real-life challenges.

Entrepreneurship programs are integrated into our curricula to respond to the changes in the job market.

Support for entrepreneurship in and startups in many ways:

- **Tellus Innovation Arena** – coworking space, community building and co-creation
- **Business Kitchen** – entrepreneurship hub
- **Minor studies in Entrepreneurship** available for all students
- **Innovation services** offer support for inventions, patenting, commercialization of research results and research based startup-companies.
Alumni
Over 50,000 alumni – including

**Martti Ahtisaari**
- Peace mediator
- United Nations diplomat
- Nobel Peace Prize laureate 2008
- President of Finland 1994-2000
- Honorary Doctor 1980
- Graduate 1959

**Leena Peltonen-Palotie**
- 2010 2009 Finnish Science Academician
- Helped to found the UCLA Department of Human Genetics
- MD 1976, PhD 1978

**Paula Vanninen**
- Director of Verifin, Finnish Institute for Verification of the Chemical Weapons Convention
- M.Sc. 1984, PhD 1992

**Jarkko Oikarinen (WiZ)**
- Technical Lead Manager at Google
- Inventor of the first Internet chat network, Internet Relay Chat (IRC)
- Master of Science (Tech.) 1992, PhD 1999

**Baylie Damtie**
- President, Bahir Dar University, Ethiopia
- Academic Vice President (Provost), Bahir Dar University
- PhD in Physics 2004

**Jussi Pesonen**
- President and Chief Executive Officer, UPM
- M.Sc. (Eng.)

**Kaisa Hietala**
- EVP for Renewable Products at Nestlé
- Senior VP, Passenger Traffic, VR-Group
- M.Sc. (Eng.) 1995

**Anssi Lassila**
- OOPEAA Office for Peripheral Architecture
- Finlandia Prize for Architecture 2015 for Puukuokka
- Among winners of the American Architecture Prize 2016
- Architect 2002

**Anne Stenros**
- Chief Design Officer CDO, City of Helsinki
- Design Director, Kone Corporation Architect 1981

**Sakari Orava**
- Sports medicine surgeon, physician, orthopedist and professor
- Client list includes Real Madrid, FC Barcelona, Chelsea FC and Juventus.
- MD in 1972 and PhD in 1980
Attractive, renewing University of high impact

High impact is based on the excellent competence of our people, and on everyone contributing their utmost in their own role.

We have to be an attractive university for top academic talents, potential students and collaboration partners. We want to strengthen our relationship with our alumni.

Leadership is based on a balanced development of professional expertise, efficiency and wellbeing at all levels.

Universities are facing a challenge for renewal. Everyone is encouraged to re-think and develop their own work and ways of working.
President of Finland Urho Kekkonen signs the University of Oulu act on July 8th 1958