
LAB University of
Applied Sciences

# LAB University of Applied Sciences

**9,800**
students

**3**
campuses
Lappeenranta, Lahti, online

About
**1,250**
international
degree students

**550**
teachers and RDI experts

**LUT University + LAB University of Applied Sciences = LUT Universities**
LAB – part of LUT Universities

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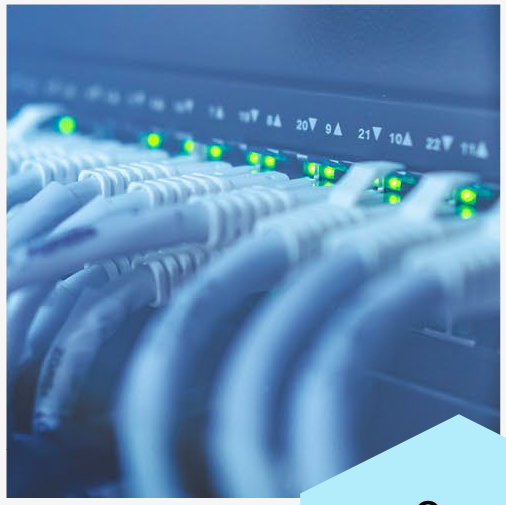

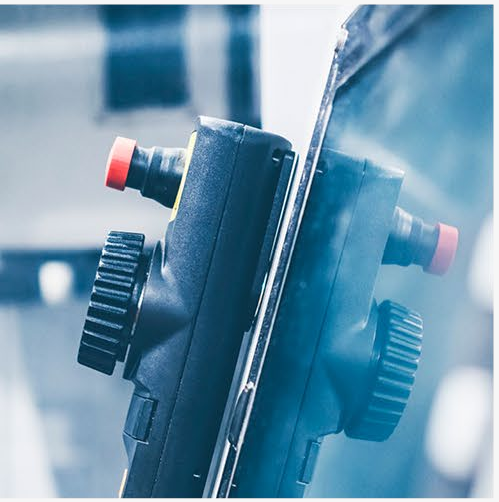

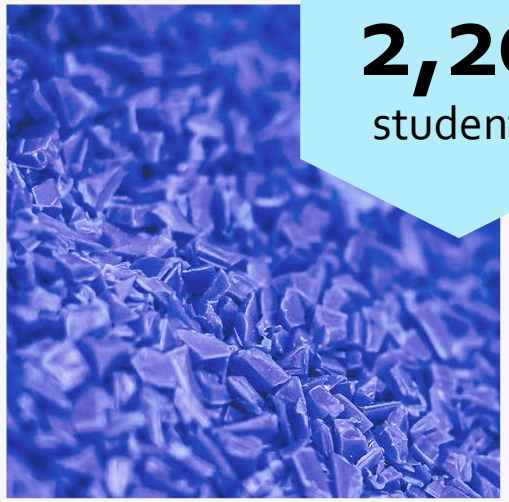

Over
**2,200**
students

**Other Units at LAB**
Business, Social Services and Health Care,
Design and Fine Arts, Tourism and Hospitality

# Technology

**Bachelor of Engineering** (Finnish)
Environmental Technology | Mechanical Engineering |
Wood Technology | Construction Engineering | Civil Engineering |
Urban Planning | Information and Communication Technology |
Electrical and Automation Engineering | Biomaterials and Food Technology

**Bachelor of Construction Management** (Finnish)

**Bachelor of Engineering** (English)
Industrial Information Technology | Industrial Mechanical Engineering |
Sustainable Construction Technology | Sustainable Solutions Engineering

**Master of Engineering** (Finnish)
From IoT to AI | Regenerative Leadership | Urban Sustainability

**Master of Engineering** (English)
Urban Sustainability

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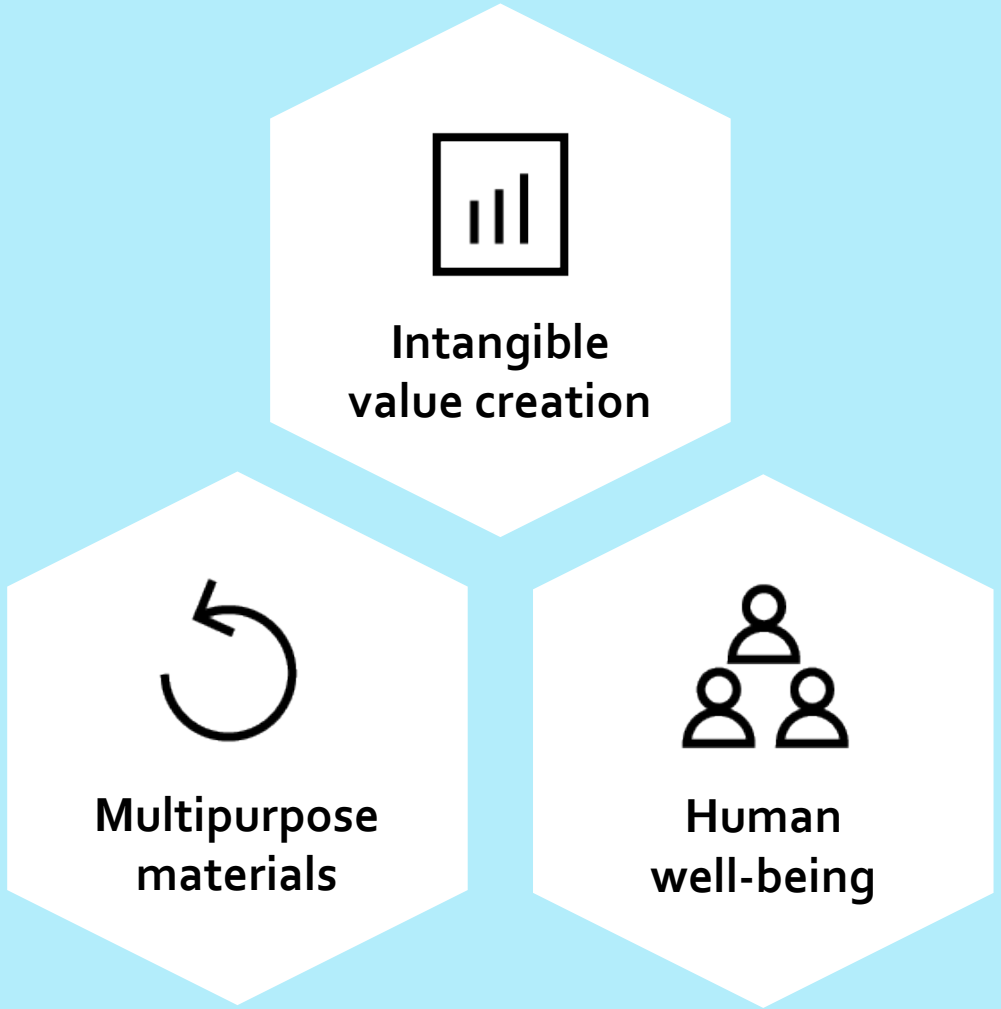
# We are building responsible, sustainable, and regenerative growth

We help to create new jobs by helping companies to grow.
Our active collaboration with SMEs in particular generates new solutions and innovations.
We believe the growth of businesses leads to well-being.




**We enable responsible growth**
– LAB strategy 2030

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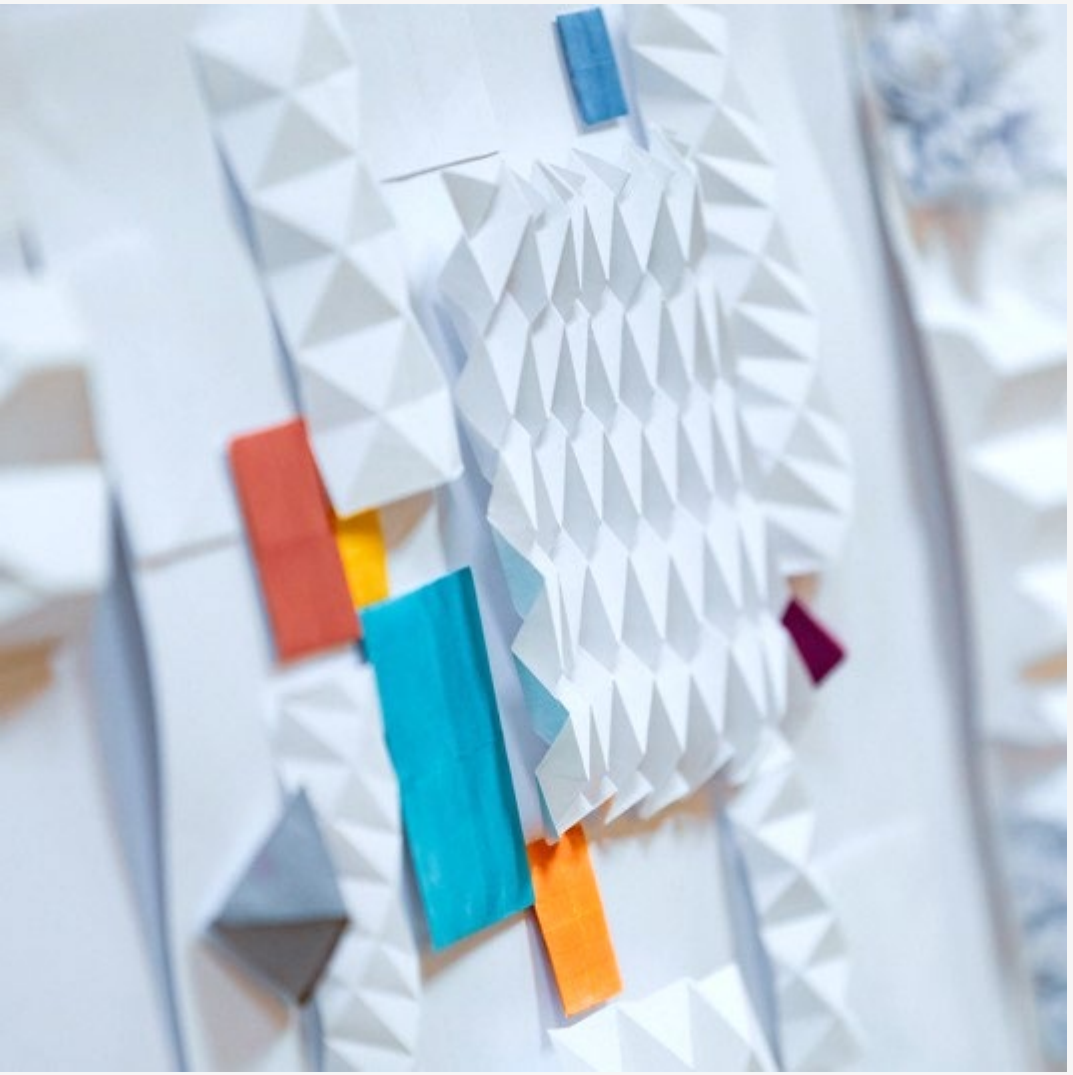

# Multipurpose materials

The climate is changing and the carrying capacity of the environment is threatened. Energy and food are critical resources. Materials must be recycled and utilised in various ways.

→ **We provide sustainable and scalable solutions for materials and their flows.**

**Due to climate change, materials need to be circulated sustainably.**

Our strength: Understanding the systemic nature of the circular economy and applying it to research and education. We create digital innovations and business opportunities that support the circular economy.

- We identify and utilise bio-based waste and side streams and study their upcycling and develop materials containing recycled materials.
- We promote sustainable food production that relies on plant-based raw materials and ecosystem thinking.

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# Research groups boost advanced RDI

LAB has **nine research groups** that conduct strategic applied research on our focus areas

| Intangible value creation | Multipurpose materials | Human well-being |
| --- | --- | --- |
| Design for Futures | Sustainable Material Solutions | Digital Transformation in Health and Safety |
| Growth and Commercialisation | Biomaterials | Physical Activity and Functional Capacity |
| Radical Innovations Lab | | Diverse and inclusive working life |
| Responsible business and sustainable value creation | | |

# Innovation and learning environments create impactful expertise

Circular economy laboratory

3D printing laboratory

Cooperatives

XR and data laboratory

Business Mill expert services

Start Hub expert services

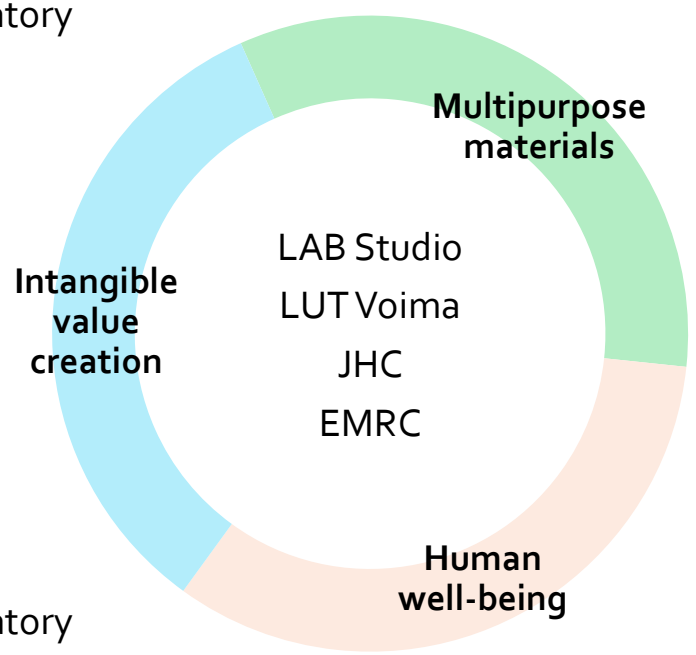
Entrepreneurship Hub

Labtic

Muotola

Interior design laboratory

Simulation centre




Wood technology laboratory

Furniture testing laboratory

Construction technology laboratory

Electricity and automation laboratory

Food Pilot Plant

GastroBar Saimaa

LABlanssi

Motiivi

LAB WellTech

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# FOOD PILOT PLANT

https://lab.fi/en/yrityksille/tutkimus-prototypointi-ja-testaus/food-pilot-plant
(video)

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# Food Pilot Plant


Product development laboratory: R&D and testing services for plant-based food products, and test batch production

- Built to respond for the regional need
- Biomaterials and food technology – engineering program will start at LAB in fall 2025

- Laboratory staff and Food team have various backgrounds in research and development of plant-based food products and drinks

Laboratory staff started working 1/2024-
Facilities utilized for projects since 1/2024-
Commercial activities 4/2024-
Funding for research applied 1/25-

# Food Pilot Plant: current focus on oats and drinks

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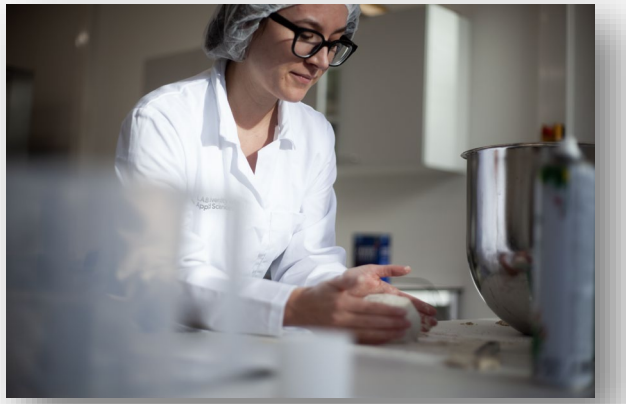
- Extraction equipment: co-operation with LUT University
  - Supercritical $CO_2$ extraction, extraction equipment, spray dryer
- Development services for plant-based and carbonated drinks and distillates
  - Autoclave
  - Distilling equipment
- Test bakery
  - Development services for bakery products
    - Co-operation with Baron Foodtech
  - Hammer mill
- Laboratory
  - Basic process-related analyses (pH, viscosity, etc.)
  - Texture Analyser, Volume Scanner
  - Condition cabinet



# Projects related to Food Pilot Plant

- Mainly regional development projects, e.g.
  - **Päijät-Häme Foodhub**
    - Identifying regional RDI needs, developing services of Food Pilot Plant
  - **Hämilis**
    - Waste to minimum, added value to maximum
    - Aim to create a waste management tool for companies
  - **Food Campus Finland – Strengthening networks**
    - Developing the basis of a collaboration network for companies and stakeholders, which promote food exports of Finland
    - Strengthening international business, bringing together RDI activities and providing support for company RDI needs
    - Strengthening food system of Päijät-Häme and regional companies' prerequisites for international business



# Research activities

Research background in Food team: food science and grain technology, especially oats (Uni. Helsinki), beers and wild yeasts (VTT)

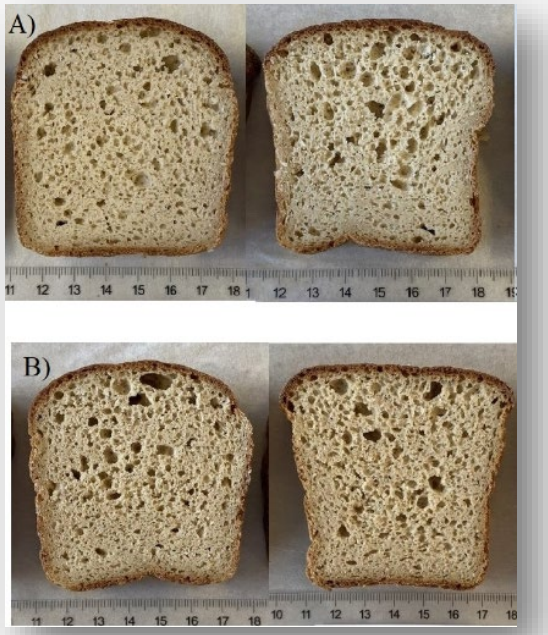
**Funding for oat research was applied 1/25** (ELY-keskus, EIP)
Which factors affect the quality of oat products, and how processing quality could be predicted from raw material?

- Pure oat cultivars, replicates from couple of growth years with several locations
- Processability and food products: milling process, 100% oat bread, oat milk

**Other research interests:**

- Utilization of food system side-streams (e.g., oat hull), fermentation, hydrocolloids
- Improving the quality of plant-based products, such as plant-based cheeses (nutrition, texture, sensory properties)
- Applied sensory evaluation
- Distillation research (e.g., special malts)

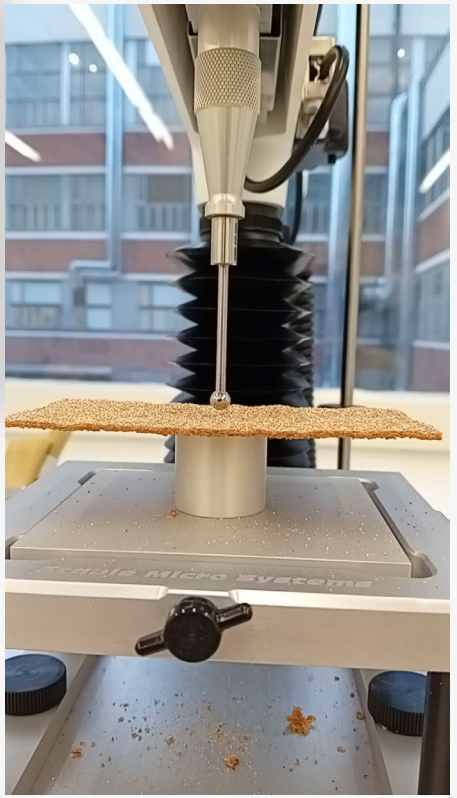
Open for international mobility and collaboration!

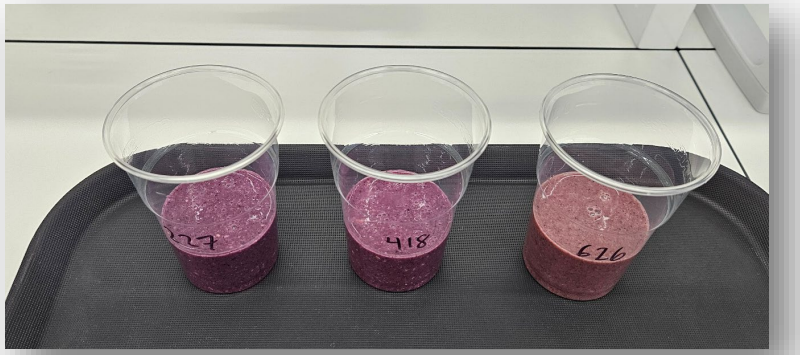



Cultivar-pure 100% whole grain oat breads. Sammalisto et al. 2021.

# Activities this far at Food Pilot Plant, examples

- Service sales and company projects, e.g., completed and on-going
  - Accelerated aging in condition cabinet, evaluation with sensory panel
  - Sensory evaluation of craft beers
  - Storage stability of food packages in condition cabinet (adherence of labels after various conditions)
  - Optimization of heat-treatment to prolong storage time
  - Developing a new drink product (at our facilities, testing in real production)
  - Investigating special raw material in baking application (milling, baking)
  - Developing a new gluten-free bakery product from scratch
  - Developing an existing bakery product regarding textural and sensory properties
  - Whiskey development for local distillery
  - Innovation pilots of food products in projects (developing process and making a prototype)
  - Method development with Texture Analyser for various food products





# Events related to Food Pilot Plant

- Oat seminar (13th of March) at Lahti campus to discuss the development and export potential of oats and to bring oat-field together
  - Organized by projects Päijät-Häme Foodhub & Food Campus Finland
  - Already 60 participants (24th of Feb) have been registered (from companies, educational institutes, etc.)

- Drink seminar is planned to be organized in fall 2025

- Contact for collaboration:
  - Laboratory coordinator Soila Saavala (soila.saavala@lab.fi)
  - Product manager Jarkko Nikulin (jarkko.nikulin@lab.fi)
  - Researcher Saara Sammalisto (saara.sammalisto@lab.fi)

# We Enable Responsible Growth

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