Nordic Biomaterials by CHEMARTS

9–20 August 2021

Aalto University

Nordic Biomaterials by CHEMARTS

Create new concepts for sustainable development by combining design and natural materials science.

In the coming years, our material world will change dramatically. The overuse of existing raw materials cannot continue and global consumption must decrease. However, our need for materials will not disappear: also in the future, materials will come to nurture us, cover us, comfort us, delight us, as well as keep us alive. This means that we need many new ideas, collaboration across all borders and hard work to replace our existing material systems and consumption habits with more sustainable ones. If used wisely, wood- and plant-based materials offer one possible pathway towards a more sustainable material world: they come from renewable sources, can be modified on a chemical level, and can be used for recyclable or biodegradable products.

Sustainable design and renewable materials

Nordic Biomaterials by CHEMARTS inspires students to combine design and material science for new cellulose-driven concepts and ideas. Combining natural materials with advanced technologies offer new possibilities for sustainable development within existing and emerging industries.

This graduate-level course teaches students with varying backgrounds (design, science, engineering, business) to combine design with material research. It introduces a broad spectrum of biomaterials, especially wood- and plant-based. During the course, students familiarise with practice-based material research, experience how interdisciplinary material research happens in practice, and explore how raw materials could be turned into innovative business ideas in the context of the circular economy.

What is CHEMARTS?

CHEMARTS is a long-term strategic collaboration between two Aalto University schools, the School of Chemical Engineering (CHEM) and the School of Arts, Design and Architecture (ARTS). The schools merged their forces with the aim to invent new ways to harness wood and cellulose. The idea is to research the performance and design of advanced cellulosic materials for innovative uses and inspire students and researchers to create new concepts for the future use of cellulose and other biomaterials.

Cover photo: Eeva Suorlahti

Basic information

Application period
1 February - 31 May
summer.aalto.fi

Course	**Nordic Biomaterials by CHEMARTS**
Credits	**6 ECTS**
Format	**Online**
Teaching period	**9-20 August 2021**
Duration	**2-week intensive + pre-and post assignments**
Application period	**1 February - 31 May 2021**
Eligibility	**Bachelor's degree**
Course fees	**1400€ tuition fee + 300€ programme fee (incl. VAT 24%)**
Website	**Nordic Biomaterials by CHEMARTS**

CHEMARTS aims to inspire students to explore biomaterials and create new concepts for their use.

Photo: Eeva Suorlahti

Learning outcomes

Familiarize with materials that are processed either chemically or mechanically from trees or other plants, such as cellulose fibres, fibrils (micro- or nano-structured), lignin, bark extractives and novel combinations of these.

Develop innovative ideas through hands-on prototyping and experimenting with materials.

Experience an interdisciplinary working environment in practice.

Understand the principles of scaling the ideas towards innovations and even commercialisation.

Awareness of the main sustainability issues related to this field.

Combining natural materials with advanced technologies offer new possibilities for sustainable development within existing and emerging industries.

Project: Chiao-wen Hsu and Yu Chen

Photo: Eeva Suorlahti

Practical arrangements

Application period
1 February - 31 May
summer.aalto.fi

Course Schedule

2-6 August, Prework (online)

- Self-paced course orientation
- Laboratory Safety course

9-20 August: Intensive weeks (on campus)

- Daily program 9-17, including lectures, hands-on experimentations and teamwork (detailed program to be shared later)
- One-day excursion to the forest
- Joint presentation event

by 31 August: Post-work (online)

- A report including documentation of the research process and individual reflection on key takeaways, and course experience.

Workload

The total course workload of 160h (6 ECTS) is divided as follows:

- 20h Self-paced orientation and Laboratory Safety course
- 10h Lectures
- 40h Class preparation
- 30h Laboratory work
- 40h Project work in teams
- 10 h Excursion
- 20h Post-work assignment

The course is graded pass/fail.

The passing of the course requires active participation individually and in teamwork, and a report of the working process.

Photo: Eeva Suorlahti

Social Program

Getting to know fellow students from around the world is one of the best things about study abroad experiences. Aalto University Summer School offers extracurricular programme and networking opportunities to get to know both Finland and your new coursemates. See some examples of our activities below!

Welcome evening

—

The start of your Summer School experience! Get together with other course participants in a relaxed atmosphere and find friends to explore the city with.

Photo: Heidi Strengell

Tour of Helsinki

—

Discover Helsinki's sights with other Summer School students and hear more about the past and present of the Finnish capital.

Photo: Kari Ylitalo

A day in Finnish nature

—

Take a day trip to the forest or the seaside! Did you know there is a national park only 25 km away from the Otaniemi campus?

Photo: Unto Rautio

Application instructions

Find a course on summer.aalto.fi

Fill in your application online

Confirm your participation after being accepted