

Master's degree in micro- and nanotechnology

Be part of forming
the future!



Would you like to contribute to progress?

Then the Master's study in micro- and nanotechnology at Vestfold University College (HiVe) is the natural choice for you. You will become a specialist in tomorrow's technology and be able to participate in its development.

The study of micro- and nanotechnology at HiVe is a unique, exciting and practical study - a study that will give you job opportunities around the world.



**HØGSKOLEN
I VESTFOLD**
VESTFOLD UNIVERSITY COLLEGE

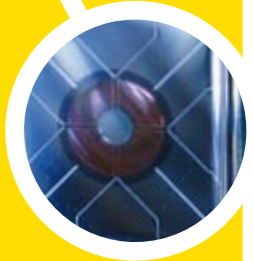
What is micro- and nanotechnology?

Micro- and nanotechnology is the knowledge about making products at the micro- and nanometer scale. This means a totally different lengthscale than what is used in traditional industry. A micro- and nanosystem often contains electronics, one or more sensors, and maybe an actuator (micromachine). The system may have mechanical, electrical, optical, chemical or hydraulic functions, or various combinations of these. A microsystem is made from basic materials such as silicon, plastics, glass and metals. Patterns are transferred photographically, and the materials are etched to achieve the desired patterns. By depositing layers of new materials, in micro- or nanoscale, entire systems can be built, with almost unlimited possibilities for different functionalities.

**Did you know?
Microsystems from
Vestfold measure the
atmospheric pressure
on Mars!**



**From toy to
space industry**



Close collaboration with industry

The study in micro- and nanotechnology at HiVe naturally takes place in close collaboration with industry. In the area around Horten, a leading international, microtechnology environment is situated. Its goal is to become no. 1 in the world in building new industry based on this technology.

Test your ideas

As a student in micro- and nanotechnology at HiVe, you have access to a modern laboratory where you can test out your ideas. If you would like to go even further, the lab also offers exciting and nearly unlimited research possibilities. Perhaps, you will be the one who discovers the latest within micro- and nanotechnology.

The industry needs your knowledge

You have many job possibilities as an engineer in micro- and nanotechnology. A number of industrial enterprises wish to take part in this new knowledge. Your competence is sought after, for example, in regards to medical instruments and biotechnology, transport, space applications, airplanes, oil and gas extraction, industrial process control and environmental monitoring. You can work with development of ICT systems, product development, production technology, production management, testing, service, business development, marketing and sales. Or, perhaps, you would rather pursue research and development at universities or technical consultation within the subject area, or maybe starting your own business? The possibilities are many, and they will increase even more in the years ahead.

Micro- and nanotechnological products in steadily growing areas

We find the finished products of micro- and nanotechnology within all imaginable technical areas, from toys to satellites, communication, medicine, consumer electronics, oil extraction, security and vehicles, just to name a few. The list is long, and it grows longer day by day.

Here are some examples of well-known products that contain micro- and nanosystems:

- Ipad
- Mobile telephones
- Printing heads for inkjet printers
- Measuring system for release of air bags in cars
- Tire pressure gauges in cars
- Hearing aids
- Pacemakers
- Systems for measuring blood pressure
- Pressure and speed gauges in airplanes
- Gas concentration measurement systems
- Microbiological and chemical analysis systems



Exciting research projects at Vestfold University College

Heart monitoring:

Development of a microsystem for the monitoring of the heart together with The National Hospital of Norway.

Microbuilders:

Construct your own microsystem and have it made at a European company.

Microenergy:

Development of microsystems for harvesting energy from movement.

Biological Microsystems:

Microchannels are produced at HiVe and are used to study living cells.

3D micro building:

The future's electronic building methods in three dimensions.

You are in the centre

The study in micro- and nanotechnology at HiVe places you, the student, in the centre. Here, special emphasis is placed on individual follow-up. There is a close communication between the student and those responsible for the subject matter, with regular handing-in of assignments and tests - always in cooperation with you as the student. Your education should suit you - the university college will help you to get the most out of your education in the best way for you.

An international study

The Master's study in micro- and nanotechnology is an international study. Here there are students and professionals from a number of countries around the world. The teaching is given in English. It is exciting and motivating to be part of such an environment.

A unique Master's study with a broad curriculum:

1. YEAR (60 credits)

- Applied mathematics
- Micro-mechanics
- MEMS-design
- Electronic system design
- Micro-fabrication
- Measurements and characterisation

2. YEAR (60 credits)

Final project and two electives:

- Micro sensors and actuators
- Functional materials and nanotechnology
- Packaging technology
- Bio - MEMS
- Industrial innovation



A university college with ambitions!

Vestfold University College, Faculty of Science and Engineering, has more than 60 scientific employees and 500 students. The Faculty offers Bachelor programs in the following subject areas: Computer Science, electronics, electrical and automation engineering, product design and micro- and nanotechnology. We also offer a future-oriented Master's in micro- and nanotechnology, as well as PhD studies in collaboration with the University in Oslo. Each year extensive research and commissioned work is carried out at HiVe. Industry and commerce in the region, together with the university college, have been proclaimed by the government as "The Norwegian Centre of Expertise" (NCE). NCE Micro- and Nanotechnology is one of nine national expert centres in Norway. Our focus is industrial and commercial development within microsystem technology, utilisation of micro- and nanotechnology and miniaturization of ICT-systems. You can be a part of all this as a Master student.

Read more about the study and admission at <http://nano.hive.no>

Vestfold University College offers a complete education in this exciting area

