

MASTER 2021-2022

MOLECULAR LIFE SCIENCES



ARE YOU LOOKING TO BROADEN YOUR CAREER OPTIONS IN THE FIELD OF BIOSCIENCE? GAIN PROFESSIONAL EXPERIENCE WHILE STUDYING? EARN A HIGHLY-RATED MASTER DEGREE THAT MEETS INDUSTRY NEEDS? THEN SIGN UP FOR MOLECULAR LIFE SCIENCES AT HAN UNIVERSITY OF APPLIED SCIENCES.
HANUNIVERSITY.COM/MMLS

OPEN UP NEW HORIZONS.

HAN_UNIVERSITY
OF APPLIED SCIENCES

PROFESSION_

This master focusses on applied research and product development in the bioscience sector. The degree gives you the skills to independently plan, organize and execute projects. To devise experimental strategies and write scientific documents. And to oversee the organizational and interpersonal aspects of your projects.

Where you'll work? Any area of the bioscience sector. In pharmaceuticals, diagnostics, personal health care, the food and feed industry. Universities, hospitals and private research institutes. The opportunities are endless.

JOBS

With this master degree, you can get a job as:

- (Junior) Project Leader
- Lab Manager
- Researcher

A GOOD MATCH?

- Do you have a bachelor degree in molecular life sciences, biotechnology or similar?
- Are you looking for more knowledge, skills and responsibility?
- Are you interested in both the science and organizational aspects of bioscience projects?
- Would you like to translate fundamental knowledge into practical applications, such as drugs or diagnostics?

YES? Then the program is a good match for you!

WORKPLACE LEARNING

Workplace learning is an integral part of this master degree. In the full-time option you are an intern for the duration of the program. In the part-time option you are already employed. Your workplace must be suitable for completing the assignments. We collaborate with the professional field to create internship positions for full-time candidates. It's also possible to arrange your own internship position.

PROGRAM IN BRIEF

THEORY AND PRACTICE

A hallmark of learning at HAN is the integration of theory and practice. This comes about through close collaboration with the professional field. In this case the bioscience sector. In fact, for the entire duration of this degree, you work as an intern or employee at a company or research institute. So you continually work on projects that contribute to the actual development of bioscience products. Discovering new targets or drugs. Optimizing protein production and purification. Developing and validating diagnostic tests. Put your knowledge straight into practice!

PROGRAM OVERVIEW

Module 1: Fundamentals

This module refreshes your basic knowledge and skills in the field of molecular life sciences. Each week you work on concrete assignments. Your lecturers give you feedback on these. At the same time, you work as an intern.

Module 2: Drug Development

This module follows the entire drug development process. This starts with the discovery of a suitable target for a medicine in a cell/organism. The process continues right up to the testing of a new medicine in pre-clinical studies. The module includes an online component on pharmaceutical chemistry. You follow parts of an online master degree for this through the University of Florida.

Module 3: Production of Biomolecules

Here you learn about the efficient production of biomolecules for various industrial applications. You write and present project proposals for the production of enzymes and microbial oil. You also delve into the consequences of GMP requirements and the opportunities of Quality by Design for your production strategy.

Module 4: Vaccines and Diagnostics

This module focuses on developing vaccines and diagnostic tests. You get the broad picture. So not just the science, but also practical and financial considerations. You study the latest literature and quality guidelines to complete your assignments.

Module 5: Research and Product Development (Workplace Learning)

In module 5 you create a number of professional products relating to your internship. For example, a scientific report, a presentation and a business plan.

Module 6: Managing Projects (Workplace Learning)

Module 6 is about successfully managing projects. You write a complete project proposal and improve your interpersonal skills.

Module 7: Masters Project

The final step in your program: the graduation project. Here you combine all the knowledge and skills you have picked up in the program. The aim? To plan and execute your own project. Where? At your internship company or organization.

BUILDING ON YOUR PROFESSIONAL EXPERIENCE

Professional experience is key to success in the bioscience sector. During your internship, you build up experience with research and managing projects. Where you'll go? Past students went to companies like MSD, Nutricia and the HAN BioCentre. During your master project, you independently conduct applied research or develop a product for your internship company. You might develop a diagnostic test. Conduct drug research. Develop a laboratory kit.

WHY STUDY MOLECULAR LIFE SCIENCES AT HAN?

Top program

Molecular Life Sciences rated 'top program' for 7th year running by independent consumer guide (Keuzegids Master).

Latest insights

Students and staff get latest insights from the HAN BioCentre and various other contacts in professional practice. HAN BioCentre conducts contract research for the life sciences industry.

Workplace learning

You work as an intern or employee for the full duration of the program. So you can immediately apply what you've learned in a professional setting.

Regular review

External advisors regularly review the program for its relevance to biotechnology sector.

RESEARCH

This program is connected to HAN BioCentre, where we provide applied research within the whole Biodiscovery chain: from discovery through analysis, to production and application of (new) biomolecules. Biodiscovery contributes to society's shift towards a biobased economy.

Research lines include biorefinery, discovery of new antimicrobials, protein production, production of microbial oil, key enabling technologies such as bio-informatics and analytical chemistry, and finding alternatives to animal testing. In the course of the latter research line, HAN BioCentre is working with Oxford University and other Dutch universities on the *C. elegans* screening system.

YOUR SCHEDULE

Full-time

In the first 1.5 years you work as an intern for 3 days a week and attend classes 1 day a week. Classes are on Mondays during working hours. In the final half year, your focus is the master project. That's a project you carry out for and at your internship company. In that period, there are no classes. You spend 5 days a week at your internship company.

Part-time

Your schedule and length of study will largely depend on your work. Your lectures are on Mondays during working hours.

ADMISSION REQUIREMENTS

→ You need to have one of the following degrees:

- Bachelor of Applied Sciences in Life Sciences or Higher Laboratory Education
- Bachelor of Science in Biochemistry, Biotechnology, Life Sciences or comparable discipline

→ Fluency in English:

- IELTS 6.5 or equivalent

→ Laboratory research experience of at least 5 months

hanuniversity.com/admission

Do you have a different degree?

You can take part in an admission assessment to prove that you have relevant bachelor-level qualifications. Contact master.mls@han.nl for more information about this assessment.

You need an internship placement in the field to successfully complete the full-time program. If you meet the admission requirements, the program can help you find one.



This master program encourages students to think outside the box, to conceive wild ideas. Students are looking further, seeing more of the bigger picture. New knowledge keeps the whole organization fresh.

MAARTEN WITVLIET / PROJECT LEADER, MSD ANIMAL HEALTH



OPEN DAYS

Due to the corona crisis, our events look different than usual. If they cannot go ahead, we provide an online alternative. For the latest information, visit hanuniversity.com/opensday.

NEXT STEPS IN ORIENTATION

Interested in studying at HAN University of Applied Sciences? Want to find out more first? Come and meet us! Either online or in person. Here's how you can meet our lecturers, students and alumni:

- Open Days
- Education Fairs
- Information Sessions
- Online Meeting
- Student for a Day

hanuniversity.com/meetus

APPLICATION PROCEDURE

Step 1

Apply on [Studielink.nl](https://studielink.nl), the central online application tool for higher education in the Netherlands.

Step 2

Send the necessary documents. HAN Admissions Office emails you about which documents to send.

Step 3

The program manager reviews your application. You might be asked for additional information.

Step 4

Find out whether you've been accepted. HAN Admissions Office emails you the outcome of your application.

Step 5

Received the acceptance letter? Paid the tuition fees? Then you're officially enrolled in the program.

IN SHORT



Location
Nijmegen



Language
English



Program start
September



Program duration
2 years (full-time)
3 years (part-time)



Study load per week
Contact hours: 8
Workplace learning: 24
Study hours: 8



Degree
Master of Science



Graduation percentage
80% of all students graduate within 2.5 years

OPEN UP NEW HORIZONS.

HAN CAMPUS NIJMEGEN

Laan van Scheut 2
6525 EM Nijmegen
The Netherlands

QUESTIONS?

HAN Information Center
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master.mls@han.nl
www.hanuniversity.com

SOCIAL

Facebook.com/HAN_International
 Instagram.com/HAN_International
 Youtube.com/HANUAS

MASTER ENGINEERING SYSTEMS 2021-2022

AUTOMOTIVE SYSTEMS



THE AUTOMOTIVE INDUSTRY FACES ENORMOUS CHALLENGES. HOW CAN WE STAY MOBILE WHILE REDUCING CO2 EMISSIONS? HOW DO WE MAKE CARS SAFER? AND SMARTER? WE NEED CREATIVE SOLUTIONS THAT COMBINE MOBILITY NEEDS WITH SUSTAINABLE DEVELOPMENTS. SIGN UP FOR AUTOMOTIVE SYSTEMS AND START WORKING ON THE SOLUTIONS!

[HANUNIVERSITY.COM/MAS](https://hanuniversity.com/mas)

OPEN UP NEW HORIZONS.

HAN_UNIVERSITY
OF APPLIED SCIENCES

PROFESSION_

Designing, developing, producing and evaluating vehicle systems and components. In short, the profession of an automotive engineer. What does a master qualification add to this skill set? Applied research. Communication. Management. The ability to lead projects while balancing engineering, economic and commercial interests. And the expertise to evaluate and realize underlying control strategies and embedded electronic systems.

Where you can work? At internationally operating automotive companies and suppliers. The border region between the Netherlands and Germany has excellent career opportunities. And with your project management and applied research skills, you'll be in high demand.

JOBS

With this master degree, you can get a job as:

- Vehicle Application Engineer
- Product Engineer
- Test Engineer R&D
- Advanced Research Engineer
- System/CAE Engineer

A GOOD MATCH?

- Are you passionate about automotive engineering?
- Do you want to broaden your career opportunities?
- Would you like to be the linking pin between different disciplines and management?
- Do you want to develop your leadership qualities?
- Are you keen to further develop your skills in intercultural teamwork?
- Are you analytical and do you enjoy doing applied research?

YES? Then the program is a good match for you!

MODULAR-BASED PROGRAM

Engineering Systems is modular-based. You follow 4 modules in total and conclude with a major project. Each module starts with the theory. Then you participate in a group project where you apply the theory in a real-life case. This is called the minor project. The modules you follow depend on your track. Each track has compulsory and elective modules.

PROGRAM IN BRIEF

THEORY AND PRACTICE

Theory and practice go hand in hand in this master degree. In the 1st year you follow practice-based modules. First you delve into the theory. Then you put it into practice during minor projects. Here you work in small groups with other students. Your aim? To solve actual issues from industry. So knowledge and techniques from fundamental research are implemented and applied in an industrial environment. This collaborative approach strengthens ties with industry. And stimulates the exchange of knowledge. In the 2nd year you work on your graduation project. That's when you independently conduct research for a company.

TRACKS

Automotive Systems is a track within the Master of Engineering Systems. Other tracks are:

- Control Systems
- Embedded Systems
- Lean Engineering
- Sustainable Energy

What is common to all these tracks? Solving complex problems through applied research. And developing innovations that meet the needs of the market and/or society.

PROGRAM OVERVIEW

1st semester

Systems Modelling Module:

- Applied Physics
- Introduction to Modelling
- Practice Modelling and Simulation
- System Identification
- Minor Project

Applied Control Module:

- Feedback Control
- Digital Control
- Apply Controller Strategies
- Controller Implementation
- Multivariable Systems and Optimizations
- Minor Project

2nd semester

Choose 2 elective modules from:

- Advanced Vehicle Dynamics
- Big Data & Small Data
- Electric, Hybrid and Fuel-Cell Powertrains
- Smart Infrastructure
- Smart Vehicles
- Sustainable Fuel Engines and Emissions

3rd semester

- Graduation Project

GRADUATION PROJECT

During your graduation project, you do research in an industrial setting. Previously you worked in teams with classmates. Now you're in the lead! Demonstrate your technical aptitude. Prove you have what it takes to manage a project. Show your communication, reporting and presentation skills. The project takes 5 to 6 months. Students have previously done their graduation projects at companies like Bosch, HyET, DAF, Ford, Apollo Vredestein and E-Traction. Want to do your project abroad? No problem. HAN can support you online.

WHY STUDY AUTOMOTIVE SYSTEMS AT HAN?

Ready for the future

This automotive master program focuses on developing the cars of the future: smarter, safer, more comfortable and more efficient.

Collaboration with industry

Various automotive companies contribute to the curriculum. How? Through guest lectures and excursions.

Valuable network

Through the HAN Automotive Center of Expertise you build up a valuable network. Very useful for your further career.

Linked to the profession

Work on real projects for the automotive industry. Together with companies like Ford Research and DAF Truck.

Direct transfer after bachelor

Transfer directly after your Bachelor in Mechanical Engineering, Electrical Engineering, Process Technology or Automotive Engineering.

European double degree

Study for 1 year at HAN and 1 year at another European university and get a double degree (Master in Automotive Engineering and Master of Science).

RESEARCH

Work on innovative projects through the HAN Automotive Research Group. Projects where HAN collaborates with industry partners like Ford Research and DAF Trucks on themes like green and smart mobility. Take the electrification of the powertrain. The research group has been building and testing prototype vehicles and test rigs. Another research area is smart mobility. Making vehicles smarter helps prevent accidents caused by human error.

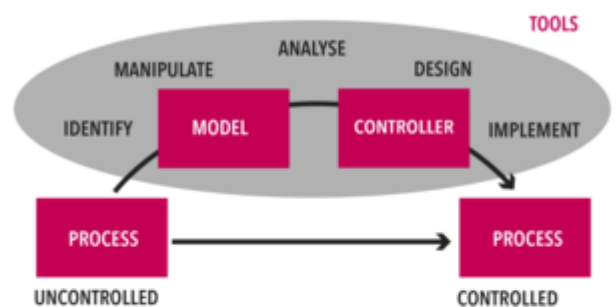
DOUBLE DEGREE

HAN has teamed up with the Czech Technical University in Prague, the Technical University Chemnitz in Germany and ENSTA, a French State Graduate and Research Institute in Brest. These four educational institutes offer the European Master of Automotive Engineering. It's a full-time 2-year program which results in a double degree (Master of Automotive Engineering and a Master of Science). Find out more on ema.ee.

ADMISSION REQUIREMENTS

- Bachelor degree in Automotive Engineering, Electrical Engineering, Mechanical Engineering or related discipline
- Minimum GPA of 2.8 out of 4.0
- Fluency in English:
 - IELTS 6.0 or higher (on all sub-scores)
 - TOEFL 80 (internet-based)
 - Cambridge Certificate (CAE or CPE)

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MASTER ENGINEERING SYSTEMS 2021-2022

CONTROL SYSTEMS

DO YOU WANT TO LIFT YOUR ENGINEERING SKILLS TO THE NEXT LEVEL? BECOME AN EXPERT ON THE ADVANCED REGULATING SYSTEMS USED IN INDUSTRY? MASTER THE LATEST TECHNIQUES AND APPLY THEM DIRECTLY IN AN INDUSTRIAL ENVIRONMENT? SIGN UP FOR THE MASTER IN CONTROL SYSTEMS.

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OPEN UP NEW HORIZONS.

HAN UNIVERSITY
OF APPLIED SCIENCES

PROFESSION_

The work of a control systems engineer? In short, researching, designing, developing, producing and evaluating control systems. What's the added advantage of a master degree? You also have the skills to effectively manage projects. To balance engineering, economic and commercial interests. And you have the technical know-how to realize and evaluate all control strategies and embedded electronic systems.

Where you can work? Anywhere in the technical sector. In higher education, at research institutes or R&D departments of companies across the globe. In fact, in the border region between the Netherlands and Germany, engineers with expertise in control systems are in high demand.

JOBS

With this master degree, you can get a job as:

- Control and Instrumentation Engineer
- Lead Engineer Control Systems
- Gas Turbine Control Systems Senior Project Engineer
- Process Modeling and Simulation Engineer

A GOOD MATCH?

- Are you looking to take your engineering expertise to the next level?
- Are you interested in control systems and how to design and develop them?
- Do you want to broaden your career opportunities?
- Are you analytical and do you enjoy doing applied research?
- Do you want to develop your leadership qualities?

YES? Then the program is a good match for you!

PROGRAM IN BRIEF

THEORY AND PRACTICE

Theory and practice are closely integrated in this master degree. In the 1st year you follow practice-based modules. First you delve into the theory. Then you put it into practice during minor projects. Here you work in small groups with other students. Your aim? To solve actual issues from industry. So knowledge and techniques from fundamental research are implemented and applied in an industrial environment. This collaborative approach strengthens ties with industry. And stimulates the exchange of knowledge. In the 2nd year you work on your graduation project.

TRACKS

Control Systems is a track within the Master of Engineering Systems. Other tracks are:

- Automotive Systems
- Embedded Systems
- Lean Engineering
- Sustainable Energy

What is common to all these tracks? Solving complex problems through applied research. And developing innovations that meet the needs of the market and/or society.

PROGRAM OVERVIEW

1st semester

Systems Modelling Module:

- Applied Physics
- Introduction to Modelling
- Practice Modelling and Simulation
- System Identification
- Energy-based Modelling

Applied Control Module:

- Feedback Control
- Digital Control
- Apply Controller Strategies
- Controller Implementation
- Multivariable Systems and Optimizations

2nd semester

Choose 2 elective modules from:

Big Data & Small Data:

- Data Collection and Machine Learning
- Capita Selecta in Machine Learning

Advanced Controller Design:

- Robust Control Techniques
- Optimal Control
- Adaptive Control Techniques

Distributed Systems:

- Design and Development Principles
- Practical Implementation Skills
- Process Dynamics and Computational Tasks
- Real-time Communication
- Temporal- and Value-domain Systems
- High-availability and Fault-tolerant Systems

3rd semester

- Graduation Project

GRADUATION PROJECT

During your graduation project, you do research in an industrial setting. Previously you worked in teams with classmates. Now you're in the lead! Demonstrate your technical aptitude. Prove you have what it takes to manage a project. Show your communication, reporting and presentation skills. The project takes 5 to 6 months. Students have previously done their graduation projects at companies like Tata Steel, HyET, DAF, Ford, NXP Semiconductors and Alliander. Want to do your project abroad? No problem. HAN can support you online.

WHY STUDY CONTROL SYSTEMS AT HAN?

Collaborate with research group

Collaborate with HAN's Research Group in Control Systems. Its research is at the crossroads between energy and mobility.

Career opportunities

Loads of career opportunities. Start working in the technical sector, higher education, a research institute or R&D department.

Geared to professional practice

Companies like KEMA, Shell IPCOS and OMRON support the master. How? Through guest lecturers, excursions and projects.

Transfer directly after bachelor

Transfer directly into this master after your Bachelor in Mechanical Engineering, Electrical Engineering, Process Technology or Automotive Engineering.

RESEARCH

Work with classmates and staff on innovative research projects during your studies. How? Through the HAN Control Systems Research Group. The group collaborates with industrial partners on various research themes. One of the current themes is self-driving (autonomous) cars. Join students from the Automotive Systems track in developing these smart vehicles!

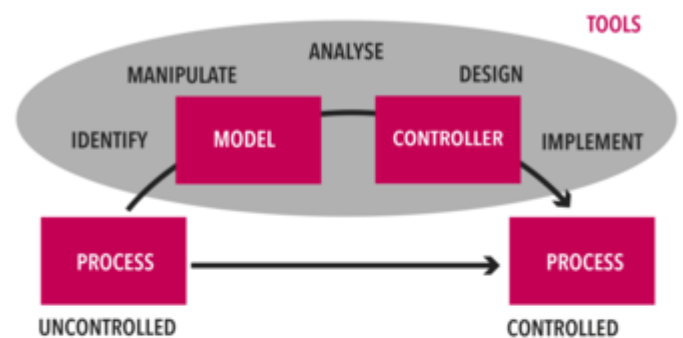
MODULAR-BASED PROGRAM

Engineering Systems is modular-based. You follow 4 modules in total and conclude with a major project. Each module starts with the theory. Then you dive into a group project where you apply the theory in a real-life case. This is called the minor project. The modules you follow depend on your track. Each track has compulsory and elective modules.

ADMISSION REQUIREMENTS

- Bachelor degree in Automotive Engineering, Electrical Engineering, Mechanical Engineering or related discipline
- Minimum GPA of 2.8 out of 4.0
- Fluency in English:
 - IELTS 6.0 or higher (on all sub-scores)
 - TOEFL 80 (internet-based)
 - Cambridge Certificate (CAE or CPE)

hanuniversity.com/admission



MASTER ENGINEERING SYSTEMS 2021-2022

EMBEDDED SYSTEMS

DO YOU WANT TO LEARN HOW TO
MODEL COMPLEX DYNAMIC
SYSTEMS? DESIGN AND TEST
SOFTWARE? BECOME AN EXPERT ON
DIGITAL TECHNIQUES?
MASTER UP YOUR ENGINEERING
SKILLS BY STUDYING EMBEDDED
SYSTEMS AT HAN.

[HANUNIVERSITY.COM/MESE](https://hanuniversity.com/mese)

OPEN UP NEW HORIZONS.

HAN_UNIVERSITY
OF APPLIED SCIENCES

PROFESSION_

What are the tasks of an engineer in this field?
Designing, developing, producing and evaluating all kinds of intelligent systems and smart devices.
A master degree adds to this skill set with expertise in applied research and project management.
In most cases you work in a team with other engineers and professionals from other disciplines.
Developing innovative electronic products using microcontrollers. Or developing the electronic hardware and software for high-tech products.

The curriculum for this program is based on constant interactions with our industrial partners. Our applied research focuses on their needs and their interests. This puts you at the forefront of innovation. And gives you outstanding employment opportunities.

JOBS

With this master degree, you can get a job as:

- Embedded Systems Architect
- Real-Time Systems Engineer
- Embedded Software Engineer

A GOOD MATCH?

- Do you want to broaden your career opportunities?
- Do you enjoy working with engineers and people from other disciplines?
- Are you analytical and do you enjoy doing applied research?

YES? Then the program is a good match for you!

PROGRAM IN BRIEF

THEORY AND PRACTICE

Theory and practice go hand in hand in this master degree. In the 1st year you follow practice-based modules. First you delve into the theory. Then you put it into practice during minor projects. Here you work in small groups with other students. Your aim? To solve actual issues from industry. So knowledge and techniques from fundamental research are implemented and applied in an industrial environment. This collaborative approach strengthens ties with industry. And stimulates the exchange of knowledge. In the 2nd year you work on your graduation project. That's when you independently conduct research for a company.

TRACKS

Embedded Systems is a track within the Master of Engineering Systems. Other tracks are:

- Automotive Systems
- Control Systems
- Lean Engineering
- Sustainable Energy

What is common to all these tracks? Solving complex problems through applied research. And developing innovations that meet the needs of the market and/or society.

PROGRAM OVERVIEW

1st semester

Systems Modelling Module:

- Applied Physics
- Introduction to Modelling
- Practice Modelling and Simulation
- System Identification
- Energy-based Modelling
- Minor Project

Applied Control Module:

- Feedback Control
- Digital Control
- Apply Controller Strategies
- Controller Implementation
- Multivariable Systems and Optimizations
- Minor Project

2nd semester

Module Big Data & Small Data:

- Data Collection and Machine Learning
- Capita Selecta in Machine Learning
- Minor Project Big Data & Small Data

Module Distributed Systems:

- Design and Development Principles
- Practical Implementation Skills
- Process Dynamics and Computational Tasks
- Real-time Communication
- Temporal- and Value-domain Aspects
- High-availability and Fault-tolerant Systems

3rd semester

- Graduation Project
-

GRADUATION PROJECT

During your graduation project, you do research in an industrial setting. Previously you worked in teams with classmates. Now you're in the lead! Demonstrate your technical aptitude. Prove you have what it takes to manage a project. Show your communication, reporting and presentation skills. The project takes 5 to 6 months. Students have previously done their graduation projects at companies like Tata Steel, HyET, DAF, Ford, NXP Semiconductors and Alliander. Want to do your project abroad? No problem. HAN can support you online.

WHY STUDY EMBEDDED SYSTEMS AT HAN?

Focus on research

Our focus on applied research puts you at the forefront of innovation. So your skills and expertise will be highly sought after.

Interesting network

HAN collaborates with the professional field. What this means for you? An interesting network in the creative and smart industry.

Geared to professional practice

Companies like KEMA and NXP semiconductors support the master. How? Through guest lecturers, excursions and projects.

Transfer directly after bachelor

Transfer directly into this master after your Bachelor in Mechanical Engineering, Electrical Engineering, Automotive Engineering or Process Technology. No pre-master needed. So you can start building up experience straight away.

RESEARCH

During this program you work on innovative research projects for HAN's Centers of Expertise. In collaboration with institutes like TNO, leading Dutch universities of technology, and European partner universities.

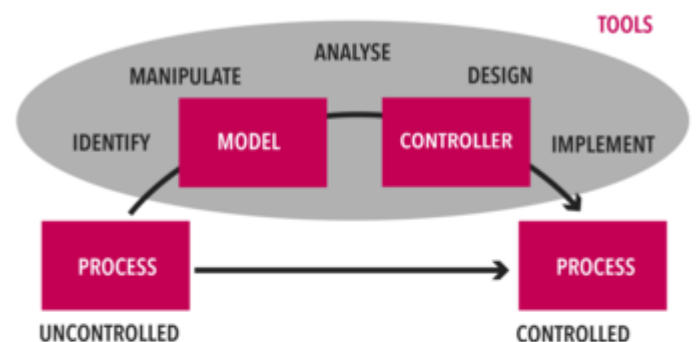
MODULAR-BASED PROGRAM

Engineering Systems is modular-based. You follow 4 modules in total and conclude with a major project. Each module starts with the theory. Then you participate in a group project where you apply the theory in a real-life case. This is called the minor project. The modules you follow depend on your track. Each track has compulsory and elective modules.

ADMISSION REQUIREMENTS

- Bachelor degree in Electrical Engineering, Mechanical Engineering or related discipline
- Minimum GPA of 2.8 out of 4.0
- Fluency in English:
 - IELTS 6.0 or higher (on all sub-scores)
 - TOEFL 80 (internet-based)
 - Cambridge Certificate (CAE or CPE)

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MASTER ENGINEERING SYSTEMS 2021-2022

LEAN ENGINEERING

DO YOU WANT TO BUILD ON YOUR ENGINEERING SKILLS? USE THE LATEST TECHNOLOGIES TO ENHANCE PRODUCTS? IMPROVE DESIGN AND DEVELOPMENT PROCESSES? GAIN A UNIQUE SKILLSET THAT IS HIGHLY SOUGHT AFTER IN INDUSTRY. STUDY LEAN ENGINEERING AT HAN!

HANUNIVERSITY.COM/MLE

OPEN UP NEW HORIZONS.

HAN UNIVERSITY
OF APPLIED SCIENCES

PROFESSION_

Technological developments allow us to improve products and manufacturing processes. But what about their impact on the different roles within a company? And on the entire supply chain? That's where broadly skilled engineers come in. Engineers with a system view. Engineers who know how to improve products and processes using an integrated methodology. Lean engineers are 'integrators'. They maintain a process view while developing and implementing improvements. Where does a lean engineer work? In all kinds of positions. From technical to managerial.

JOBS

With this master degree, you can get a job as:

- Research & Development Manager
- Integral Project Manager
- Senior Product Designer
- Industrial Engineer
- Lean Facilitator
- Innovation Manager

A GOOD MATCH?

- Do you want to work on interdisciplinary projects?
- Are you interested in improving manufacturing processes and products?
- Are you interested in the link between technology and business development?
- Do you want to be an 'integrator' in your next job?
- Do you want to broaden your career opportunities?
- Are you analytical and do you enjoy doing applied research?
- Do you want to develop your leadership qualities?

YES? Then the program is a good match for you!

PROGRAM IN BRIEF

THEORY AND PRACTICE

Theory and practice go hand in hand in this master degree. In the 1st year you follow practice-based modules. First you delve into the theory. Then you put it into practice during minor projects. Here you work in small groups with other students. Your aim? To solve actual issues from industry. So knowledge and techniques from fundamental research are implemented and applied in an industrial environment. This collaborative approach strengthens ties with industry. And stimulates the exchange of knowledge. In the 2nd year you work on your graduation project. That's when you independently conduct research for a company.

TRACKS

Lean Engineering is a track within the Master of Engineering Systems. Other tracks are:

- Automotive Systems
- Control Systems
- Embedded Systems
- Sustainable Energy

What is common to all these tracks? Solving complex problems through applied research. And developing innovations that meet the needs of the market and/or society.

PROGRAM OVERVIEW

1st semester

Systems Modelling Module:

- Applied Physics
- Introduction to Modelling
- Practice Modelling and Simulation
- System Identification
- Energy-based Modelling
- Minor Project

Applied Control Module:

- Feedback Control
- Digital Control
- Apply Controller Strategies
- Controller Implementation
- Multivariable Systems and Optimizations
- Minor Project

2nd semester

Choose 2 elective modules from:

Big Data & Small Data:

- Data Collection and Machine Learning
- Capita Selecta in Machine Learning

Lean Process Development:

- Manufacturing Strategy
- Improvement of Processes

Lean Product Development:

- Opportunity Identification
- Product Architecture

3rd semester

- Graduation Project
-

GRADUATION PROJECT

During your graduation project, you do research in an industrial setting. Previously you worked in teams with classmates. Now you're in the lead! Demonstrate your technical aptitude. Prove you have what it takes to manage a project. Show your communication, reporting and presentation skills. The graduation project takes 5 to 6 months. Students in the Master in Engineering Systems have previously done their projects at companies like Tata Steel, HyET, DAF, Ford, NXP Semiconductors and Alliander. Want to do your project abroad? No problem. HAN can support you online.

WHY STUDY LEAN ENGINEERING AT HAN?

Linked to research group

Linked to HAN's Research Group in Lean / World Class Performance. One of your lecturers heads this research group.

Broad opportunities

As a Lean Engineer you have a broad skill set. So you can work in a technical or managerial position.

Based on industry needs.

The program is based on continual interaction with industrial partners. Our applied research focuses on their needs and interests.

Direct transfer after bachelor

Transfer directly after your Bachelor in Mechanical Engineering, Electrical Engineering, Process Technology or Automotive Engineering.

RESEARCH

Lean Engineering is linked to the Research Group for Lean / World Class Performance. This group develops knowledge to optimize service and production systems in different sectors. Like small and medium-sized enterprises. Healthcare. Education. Your lecturers are actively involved in this research group. So you get the latest insights. And you get to work on innovative research projects.

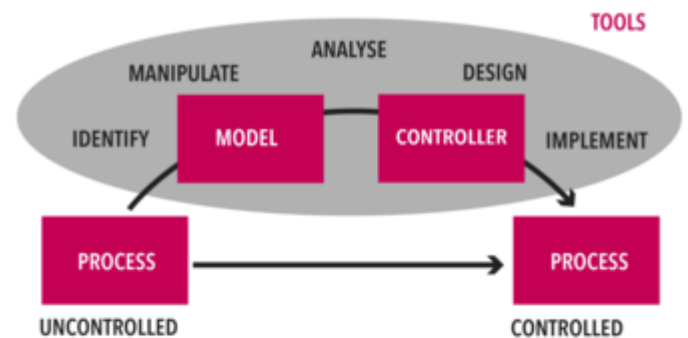
MODULAR-BASED PROGRAM

Engineering Systems is modular-based. You follow 4 modules in total and conclude with a major project. Each module starts with the theory. Then you participate in a group project where you apply the theory in a real-life case. This is called the minor project. The modules you follow depend on your track. Each track has compulsory and elective modules.

ADMISSION REQUIREMENTS

- Bachelor degree in Automotive Engineering, Electrical Engineering, Mechanical Engineering or related discipline
- Minimum GPA of 2.8 out of 4.0
- Fluency in English:
 - IELTS 6.0 or higher (on all sub-scores)
 - TOEFL 80 (internet-based)
 - Cambridge Certificate (CAE or CPE)

hanuniversity.com/admission



MASTER ENGINEERING SYSTEMS 2021-2022

SUSTAINABLE ENERGY

HOW CAN WE APPLY RENEWABLE ENERGY SYSTEMS TO FULFIL OUR FUTURE ENERGY REQUIREMENTS? HOW CAN WE OPTIMIZE OUR ENERGY SYSTEMS? AND HOW CAN WE INCREASE THEIR RELIABILITY? FIND ANSWERS TO THESE QUESTIONS AND MORE BY STUDYING SUSTAINABLE ENERGY AT HAN.
[HANUNIVERSITY.COM/MSE](https://hanuniversity.com/mse)

OPEN UP NEW HORIZONS.

HAN UNIVERSITY
OF APPLIED SCIENCES

PROFESSION_

As an energy systems engineer, you have an active role in the transition towards a sustainable energy system. Your job? Developing the technology, models and smart control for sustainable energy systems. Systems that generate, store or distribute energy. Locally. Regionally. Nationally. Even internationally.

Where you'll work? At SMEs, grid operators, energy providers or government bodies. Work on developing innovative energy systems. Or play a role in maintaining the energy balance on a national or international scale.

JOBS

With this master degree, you can get a job as:

- Energy Engineering Analyst
- Renewable Energy Asset Manager
- Energy System Engineer
- Energy Consultant

A GOOD MATCH?

- Are you looking to take your engineering expertise to the next level?
- Are you interested in sustainable and renewable energy systems?
- Do you enjoy doing applied research to solve complex problems?

YES? Then the program is a good match for you!

PROGRAM IN BRIEF

THEORY AND PRACTICE

Theory and practice go hand in hand in this master degree. In the 1st year you follow practice-based modules. First you delve into the theory. Then you put it into practice during minor projects. Here you work in small groups with other students. Your aim? To solve actual issues from industry. So knowledge and techniques from fundamental research are implemented and applied in an industrial environment. This collaborative approach strengthens ties with industry. And stimulates the exchange of knowledge. In the 2nd year you work on your graduation project. That's when you independently conduct research for a company.

TRACKS

Sustainable Energy is a track within the Master of Engineering Systems. Other tracks are:

- Automotive Systems
- Control Systems
- Embedded Systems
- Lean Engineering

What is common to all these tracks? Solving complex problems through applied research. And developing innovations that meet the needs of the market and/or society.

PROGRAM OVERVIEW

1st semester

Systems Modelling Module:

- Applied Physics
- Introduction to Modelling
- Practice Modelling and Simulation
- System Identification
- Energy-based Modelling
- Minor Project

Applied Control Module:

- Feedback Control
- Digital Control
- Apply Controller Strategies
- Controller Implementation
- Multivariable Systems and Optimizations
- Minor Project

2nd semester

Sustainable Energy Systems Module:

- Sustainable Energy Technology
- Innovations in Sustainable Energy
- Modelling, Designing and Testing Sustainable Energy Systems
- Energy System Integration
- Social and Economic Principles of Energy Systems
- Technological Advances in Sustainable Energy and Policy

Choice of the following modules:

- Smart Power Supply
- Big Data & Small Data

3rd semester

- Graduation Project
-

GRADUATION PROJECT

During your graduation project, you do research in an industrial setting. Previously you worked in teams with classmates. Now you're in the lead! Demonstrate your technical aptitude. Prove you have what it takes to manage a project. Show your communication, reporting and presentation skills. The project takes 5 to 6 months. Students in the Master in Engineering Systems have previously done their graduation projects at companies like Tata Steel, HyET, DAF, Ford, NXP Semiconductors and Alliander. Want to do your project abroad? No problem. HAN can support you online.

WHY STUDY SUSTAINABLE ENERGY AT HAN?

Supported by industry

Companies in the energy field provide trainers, share knowledge and facilitate graduation projects and excursions.

Based on industry needs

The program is based on continual interaction with industrial partners. Our applied research focuses on their needs and interests.

Research centers

Work on innovative projects at HAN's Research Center for Sustainable Electrical Energy and the HAN Automotive Research Group.

Direct transfer after bachelor

Transfer directly after your Bachelor in Mechanical Engineering, Electrical Engineering, Automotive Engineering or Process Technology.

RESEARCH

A key aspect of this master program is innovative research projects. Projects that focus on the interface between energy and mobility. Collaborate with the Sustainable Electrical Energy Centre of Expertise (SEECE). This center translates knowledge into commercially viable products and services. How? Through applied research and collaboration with regional companies in the energy sector.

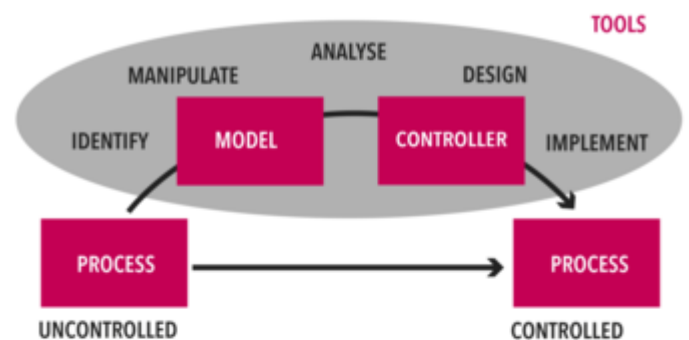
MODULAR-BASED PROGRAM

Engineering Systems is modular-based. You follow 4 modules in total and conclude with a major project. Each module starts with the theory. Then you participate in a group project where you apply the theory in a real-life case. This is called the minor project. The modules you follow depend on your track. Each track has compulsory and elective modules.

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OPEN DAYS

Due to the corona crisis, our events look different than usual. If they cannot go ahead, we provide an online alternative. For the latest information, visit hanuniversity.com/opensday.

NEXT STEPS IN ORIENTATION

Interested in studying at HAN University of Applied Sciences? Want to find out more first? Come and meet us! Either online or in person. Here's how you can meet our lecturers, students and alumni:

- Open Days
- Education Fairs
- Information Sessions
- Online Meeting

hanuniversity.com/meetus

APPLICATION PROCEDURE

Step 1

Apply on [Studielink.nl](https://studielink.nl). Select the program Master Engineering Systems. Then select the track Lean Engineering.

Step 2

Send the necessary documents. HAN Admissions Office emails you about which documents to send.

Step 3

The program manager reviews your application. You might be asked for additional information.

Step 4

Find out whether you've been accepted. HAN Admissions Office emails you the outcome of your application.

Step 5

Received the acceptance letter? Paid the tuition fees? Then you're officially enrolled in the program.

IN SHORT



Location
Arnhem



Language
English



Program start
September or February



Program duration
1.5 years (full-time)
2.5 - 3 years (part-time)



Study load per week
Full-time: 16-20 contact hours / 25 study hours
Part-time: 8-10 contact hours / 12 study hours



Degree
Master of Science in Engineering Systems

OPEN UP NEW HORIZONS.

HAN CAMPUS ARNHEM

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QUESTIONS?

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SOCIAL

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