

# Master of Automotive Systems

MASTERS PROGRAMMES





# Tune the future of automotive

Are you looking for added value?

The Master of Automotive Systems is the route towards becoming an authority in automotive design, R&D and production management on an international basis. It prepares you for responsible jobs such as a linking pin between R&D, development and marketing.

The Master of Automotive Systems (MAS) programme is entirely based on requirements in the field. The themes and modules offered by the programme will greatly improve your knowledge and skills. The programme focuses on intelligent vehicle systems (vehicle dynamics and control, driver assistance) and advanced propulsion design (driveline and power train). The curriculum directly reflects major international trends in vehicle development and manufacture.



### THEORY PROVEN IN PRACTICE

The Master of Automotive Systems programme prepares Bachelor graduates in Automotive Engineering, Mechanical Engineering or Electrical Engineering for specific development and design positions, providing a good theoretical background to techniques and skills proven in practice.

Automotive engineers are involved in all processes from research through to market demand, design and development, production and evaluation of systems and components in terms of the performance of the end product, the vehicle. The engineer contributes to building and evaluating the engine, transmission, chassis systems and components, including all the underlying control strategies and embedded and electronic systems.

### PROFESSIONAL OPPORTUNITIES

The Master of Automotive Systems engineer has good skills and knowledge within the broad field of automotive technology, including an understanding of the wide variety of disciplines involved. This includes vehicle electronics, mechatronics and software development, as well as intelligent vehicle systems interfacing with the driver and with intelligent traffic and road environment.

You have a good understanding of the automotive company processes and recognise your own contribution within the total framework. This includes automotive management aspects such as production logistics and management, quality management, project management, cost control, marketing, etc.

There is an orientation on practical results with a focus on the automotive end product. As a Master of Automotive Systems, you can apply virtual and hybrid experimental engineering tools. Your attitude is oriented towards concurrent engineering and taking responsibility. You are able to communicate with different nationalities and disciplines.

*'This professional automotive Master's programme teaches you to put theory into practice. You get a wider and in-depth view of automotive engineering and processes. And the well equipped labs in Arnhem are perfect for R&D and testing.'*

*Karel Kural*



## DIPLOMA

Successful completion of the curriculum will be rewarded with the Professional Master's degree in Automotive Systems (M eng), awarded by HAN University of Applied Sciences. The taught part of the programme entitles the student to a Postgraduate Certificate.

### Double degree route

Full-time students may spend their first year studying in an international environment at a foreign university. HAN Automotive cooperates with several international universities. A combined route enables students to obtain a double degree: a possible Master of Science (MSc) degree from a foreign university and a Professional Master's degree (M eng) from HAN University of Applied Sciences.

## PROGRAMME CHARACTERISTICS

The Master of Automotive Systems is an international professional Master's programme preparing you to operate at Master's level in the area of automotive research, development and management.

The programme consists of lectures, team and individual assignments, experimental research and laboratory exercises, model development and simulation exercises, group cases and management games, a minor project and a major Master's Thesis project. The total study load is 2520 hours (90 ECTS). The programme is scheduled full-time and part-time and will be taught in English.

## FINAL PROJECT AND MASTER'S THESIS

After having successfully mastered all the subject matter taught in the courses, a final project completes your Master's study. You carry out an in-company or an in-university project and write a Master's Thesis about it. In-company projects involve a research/development assignment that contributes to a specific component, module or vehicle process at an automotive supplier or OEM company. In-university projects involve research contributing to the competence groups of Mobility Technology, Vehicle Mechatronics or Lean Design & Processing at HAN Automotive.

## THE PROGRAMME

### COURSE CONTENT AND STUDY LOAD

#### Semester 1: (30 ECTS) \*

1	Introduction Automotive Systems	2.5 ECTS
2	Mathematics and Mechanics	2.5 ECTS
3	Practice modelling and simulation	4 ECTS
4	Vehicle Dynamics & Vibrations	4 ECTS
5	Combustion Engines and Thermodynamics	4 ECTS
6	Driveline and Transmission	4 ECTS
7	Minor Project	9 ECTS

#### Semester 2: (30 ECTS)

8	Advanced Vehicle Dynamics including modelling/simulation practice and project Vehicle Dynamics	7 ECTS
9	Advanced Vehicle Control including project Vehicle Control	4 ECTS
10	Vehicle Electronics including lab autotronics	5 ECTS
11	Control Systems Engineering	4 ECTS
12	Automotive Management	4 ECTS
13	Alternative Powertrains	3 ECTS
14	Intelligent Vehicle Highway Systems	3 ECTS

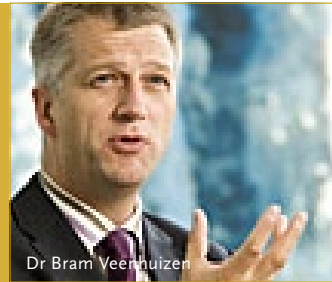
#### Semester 3: (30 ECTS)

15	Final Project and Master's Thesis	30 ECTS
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\* in European Credit Points, 1 point = 28 hours



Dr Joop Pauwelussen MBA



Dr Bram Veenhuizen

## RESEARCH AND COMPETENCE GROUP

### Mobility Technology and Vehicle Mechatronics

Students are supported by HAN's professional Automotive teaching staff and state of the art laboratory and simulation facilities within ARLA (Applied Research Laboratory Automotive). They benefit from Automotive research activities performed by HAN Automotive's research department in Mobility Technology and Vehicle Mechatronics.

#### **Dr Joop Pauwelussen MBA** *Professor in Mobility Technology*

This professorship is aimed at improving the performance of vehicle and vehicle components, in relationship to handling and comfort, by applying active control measures and advanced driver support. Special emphasis is given to the vehicle-road interface (tyre behaviour), heavy articulated vehicles and understanding of the human driver in monitoring and controlling the vehicle.

#### **Dr Bram Veenhuizen** *Professor in Vehicle Mechatronics*

This professorship focuses on the technological aspects of sustainable mobility and energy management, with special emphasis on advanced vehicle propulsion developments. The emphasis is on the application of alternative fuels (mainly hydrogen), and the development of electric and hybrid drive systems, especially those based on fuel cell technology.

## PRACTICAL INFORMATION

<b>START</b>	Once a year in February
<b>LANGUAGE</b>	English
<b>FULL-TIME</b>	1.5 years
<b>PART-TIME</b>	2.5 – 3 years
<b>STUDY LOAD</b>	2520 h (90 ECTS)
<b>DEGREE</b>	Master of Automotive Systems

## LOCATION

HAN University of Applied Sciences  
Building HAN Automotive  
Ruitenberglaan 29  
6802 CE Arnhem  
The Netherlands

## ADMISSION REQUIREMENTS

Applicants should have a Bachelor's degree in Mechanical Engineering, Electronic Engineering or Automotive Engineering. They should have satisfactory knowledge in the field of mathematics and mechanics, enabling them to identify the main issues, and have a sufficient theoretical background to be able to understand and solve elementary mathematical and mechanical problems. The minimum requirements are defined in the self-assessment form.

It is possible that a candidate may have previously completed courses on one or more of the topics of the introductory programme, for example students who have successfully followed the first year postgraduate programme in Automotive Engineering in Prague (Czech Technical University in Prague, CVUT). In that case, the student may be granted exemptions from one or more of the modules in the introductory phase of the Master's programme. The candidate is never exempted from (part of the) modules of the specialisation programme in the 2nd semester or the final project.

This decision will be based on existing knowledge, skills and experience presented by the candidate. This assessment is part of the in-take procedure.

Laptop and wireless connection facility are required to participate in the Master's course.

## REGISTRATION

Applicants need to submit:

- an application form
- a motivation letter
- a resume including previous education (list of marks GPA 3.0 or more) and professional experience, knowledge and skills
- a self-assessment, indicating the level of knowledge in mathematics and mechanics and in reading technical drawings.
- at least two letters of recommendation, one written by someone with experience in (applied) research and one written by someone representing an industrial company. If the candidate is employed by a company, this letter should express confidence and support from the company in successfully finishing the Master's programme.
- an indication of sufficient proficiency in the English language, through a TOEFL score of at least 550 or an IELTS score of at least 6.5.

The application form can be found on the HAN website.



## HAN University of Applied Sciences

*Mailadress*  
P.O. Box 2217  
6802 CE Arnhem  
The Netherlands

*Office Address*  
Ruitenberglaan 26  
6826 CC Arnhem  
The Netherlands

*Information*  
T +31 26 365 82 15  
F +31 26 364 50 66  
E [george.witjes@han.nl](mailto:george.witjes@han.nl)

Business and Management  
Engineering and Life Sciences  
Information Technology, Media and Communication  
Education  
Social Studies  
Health

### HAN MASTERS PROGRAMMES

As a professional you are continually seeking personal growth. The HAN University of Applied Sciences has a lot to offer in the areas of innovation and knowledge deepening. For both professionals developing their careers, as well as businesses and institutions. The HAN Masters Programmes offer a platform for individuals and organisations that place a strong emphasis on 'life long learning'.

We provide an environment for you to meet inspiring teachers and entrepreneurial students, and to participate in a growing network for exchanging knowledge and experience. With the HAN professional Masters Programmes you are guaranteed to receive a thorough education that will help further develop your career. Your organisation will also directly benefit from your study through HAN's commitment to exchanging knowledge and experience with the professional field.

Our professors conduct practical research based on actual organisational challenges and work closely with (Masters) students and teachers to find solutions. This synergy between theory and practice is what defines the HAN as a knowledge institution.

*All Masters Programmes are accredited by NVAO. This independent organisation ensures the quality of higher education in the Netherlands and Flanders (Belgium).*



[www.han.nl/mastersprogrammes](http://www.han.nl/mastersprogrammes)